

ACQUISITION OF ENGLISH AND SPANISH MORPHOLOGICAL
RULES BY BILINGUALS

BY

PAULETTE DALE

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CHAPTER I

REVIEW OF THE LITERATURE AND STATEMENT OF PROBLEM

Introduction

(The effects of bilingualism on children's language development have been debated over the years. There have been many hypotheses concerning the frequently poor linguistic performance observed in bilingual children. Several investigations have been conducted to support or disprove these hypotheses and have yielded conflicting information. Many investigators found there are disadvantages to childhood bilingualism; others found the negative effects of bilingualism on a child's language development are not very serious; others concluded that bilingualism has many positive advantages.

Some of the investigations have tried to control various biological and environmental factors; others have made little or no attempt to control many of the factors language acquisition generally is dependent on. Additional research has also been conducted to obtain normative data concerning bilinguals' performance on specific linguistic tasks; however, the population of Cuban-American bilinguals has been largely ignored.

The present investigation was conducted to obtain information about the effects of bilingualism on language development in Cuban-American children while carefully controlling such factors as intelligence, socioeconomic status, and amount of bilingualism already exhibited by the subjects. In addition, this investigation was designed to obtain normative data about this population's native and non-native language development which might be used in future assessment of bilingual children's linguistic proficiency.

Review of the Literature

The orientating and experimental literature relevant to this investigation is reported in three sections. The first section discusses the effects of bilingualism on a child's language development. General information including observational reports and findings from controlled investigations are reviewed. The previous and present applications of tests of morphology are reported in the second section. The third section reviews objective measurement techniques which have been utilized to assess aspects of bilingual children's receptive and expressive language proficiency.

Effects of Bilingualism on Language Acquisition

Defense of childhood bilingualism

General information and observational reports. Many investigators insist that the reported disadvantages of childhood bilingualism either do not exist or are not as

serious as several researchers claim. There are observers who go a step further and contend that bilingualism has many positive advantages. The following defense of bilingualism is derived from opinions that have appeared in the literature. These opinions were supported by experience and a number of observations of bilingual children's native and secondary language acquisition.

Several authors (Buell, 1946; Anastasi and Cordova, 1953; Carrow, 1957; Darcy, 1963; and Garcia, 1974) seem to feel that bilingualism alone should not be criticized and that other factors rather than bilingualism are to blame for the deficient performance of bilinguals in many studies. Most of these authors have indicated that the language handicap of the bilingual children in a variety of studies may be related to the presence of confused and incorrect language patterns in the home rather than the actual learning of a second language. For example, Buell (1946) concluded that incorrect English in Hawaii was due to pidgin English and not bilingualism.

Several investigators (Darcy, 1963; Thonis, 1972; Carrow, 1972; and Garcia, 1974) defend bilingualism on the grounds that most of the investigations since 1953 which have concluded that bilingualism has adverse effects on language development failed to control significant research variables such as socio-environmental and intellectual factors. These authors generally agree that existing

theories of negative effects of bilingualism have been exaggerated and are unjustified. They feel that judgements as to the total effects of bilingualism should be deferred until studies are conducted which determine the effect of bilingualism in socioeconomic environments in which the quality of the language environment in both languages is high and whether intelligence influences the ability to learn a second language proficiently. Weinreich (1961) quotes Haugen as saying:

The linguist who makes theories about language influence but neglects to account for the socio-cultural setting of the language contact leaves his study suspended, as if it were, in mid-air. (p.379)

In a very early report (Becky, 1942) it was stated that bilingualism is no handicap in speech development. Carrow (1957) reports no detrimental effects on the bilingual child's ability in spelling, total verbal output, clause length, or complexity of sentence structure. Jensen (1962b) summarized other reporters' observations by stating:

Other assertions often made are that studying a second language will aid a person to strengthen his acquired tongue, to become more sensitive to nuances, to manipulate languages more effectively, and to learn additional languages more easily. (p. 359)

Zierer (1974) describes the experience of a child in Peru whose bilingual education was psycholinguistically and pedagogically planned by his Peruvian mother and German father. At home, where the German language was the

means of communication between husband and wife and their child (only son), the child at the age of three had achieved a slightly better than average (for a three-year-old) mastery of German. From the age of 2 years 10 months on, the child was systematically exposed to Spanish. At the age of four, the child had mastered both Spanish and German with the same degree of proficiency (without interference) at the phonological, morphological and syntactic levels.

Lambert (1963) briefly describes a study that he and a colleague carried out with ten-year-olds in Montreal. When socio-environmental variables were controlled, they found that bilinguals performed better than monolinguals on verbal and nonverbal intelligence tests. They further reported that the bilingual subjects had greater cognitive flexibility and a greater ability in concept formation than the monolingual. Lambert (1963) stated that because his results were in conflict with many others, he could not be sure that the reported bilingual advantage was peculiar to bilinguals in Canada or any bilinguals who are actually competent in both languages.

Controlled investigations. A study by Lambert, Just, and Segalowitz (1970) revealed that education in a non-native language produced no retardation in learning and increased competence and performance in both the primary and secondary language. Two English-speaking and

one French-speaking control groups were chosen from a French-Canadian school. The experimental group was chosen from an English-speaking school. Socio-environmental variables were accounted for in the study. The control groups followed the method of instruction normally followed in school; i.e. the English groups were taught in English and the French group in French. The experimental group of English-speaking children was prepared by attending a French kindergarten and first grade. After these two years of instruction the children were tested in French and English. Results were compared with those obtained for the English group taught in English and the French group taught in French. Even though the bilingual children were instructed in their weaker language, French, they demonstrated an optimum level of language skills in French and still maintained an excellent control of their home language, English. Little or no interference between the children's two languages occurred.

Lambert and Tucker (1974) carried out a five year longitudinal study with the variables of socioeconomic status and intelligence being carefully controlled. One of their major purposes was to assess and evaluate the impact of elementary schooling conducted primarily in a second language on the linguistic development of children.

The children chosen to participate in the experiment were from middle class neighborhoods in parts of Canada. There was an experimental class composed of 26 children from exclusively English speaking homes who received instruction in French only. There were two control groups of children from exclusively English speaking homes who received instruction in English. There was a control group composed of 22 children from exclusively French speaking homes who received instruction in their native language.

In September 1966, all children were tested for general intelligence with a non-verbal intelligence test, The Raven Progressive Matrices. To check the family's socioeconomic status, all the parents were interviewed. The authors ensured that all subjects had a high quality linguistic environment, that an appropriate nature and extent of extracurricular activities were undertaken by the family (indoor activities of the family and outdoor excursions during weekends and vacations), that there was a good availability and quality of guidance at home, and that the family encouraged the use of such educational facilities as books, periodical literature, library, etc.

At the end of the first year, the children were tested for various skills in the English language. The experimental group performed at the general average for

their age level in English. At the end of their fifth year, the English speaking children who had been taught in French only showed the same normal, average gains in their educational attainment and were as proficient in English as those taught in the conventional manner. They also exhibited a great fluency in and understanding of the French language.

Ramirez and Politzer (1974) carried out a study on a sample of children in a bilingual education program in San Francisco. The results provide a further defense of childhood bilingualism. Spanish and English versions of grammar test were administered to 40 bilingual children at grade levels kindergarten, one, three, and five. English scores varied only slightly among grade levels. Subjects were questioned about language use. The relationships between reported language use and test results appeared to indicate that native language (Spanish) proficiency was determined by the use of the language in the home. The lack of any significant correlations between the English and Spanish version scores appears to indicate that achievement in English is unrelated to the maintenance of Spanish for bilingual children. More importantly, it was concluded that if the quality of the language environment was good and continuously used in the home even

though only English was used in school, there was no adverse effect on the primary language.

Negative effects of childhood bilingualism

General information and observational reports.

Many observers and investigators have concluded that childhood bilingualism results in many disadvantages. The following case against bilingualism is derived from opinions that have appeared in the literature.

Many authors (Weinreich, 1961; Hickey, 1972; Whitman and Jackson, 1972; Cornejo, 1973; Ervin-Tripp, 1973; Matluck and Mace, 1973; Politzer and Ramirez, 1973; Saville-Troike, 1973; and Taylor, 1974) generally agree that some linguistic interference (using characteristics of one language while speaking the other) will occur and the individual cannot learn both languages equally well.

In 1962, Jensen surveyed the literature on the ill effects of bilingualism on the individual child's speech and language development. With regard to speech development, he summarized that a child will develop faulty articulation, inappropriate pronunciation and many substitutions of sounds will result. Jensen (1962a) also

found much literature asserting that the bilingual child will encounter many problems in language development.

Jensen states:

A smaller active and passive vocabulary will result in most instances, for the child will be occupied learning two terms for one referent. Even the total number of terms is likely to be less than the total number for the monolingual. The bilingual will develop a confused, mixed vocabulary because of lexical borrowing. He will use shorter sentences, more incomplete sentences, fewer interrogative and more exclamatory sentences. Confused structural patterns, unusual word order, and errors in agreement and dependency will result. The bilingual child will make many errors in the use of verbs and tense, connectives, prepositions, nouns and articles. He will make faulty use of negatives, will fail to inflect words and will employ too much redundancy. Virtually all authors agree that an individual cannot learn both languages equally well, for linguistic interference is bound to occur. Both languages will suffer when judged by the highest standards. (p. 135)

Cornejo (1973) elicited spontaneous speech samples using visual cues from twenty-four bilingual five-year old Mexican American children. After recording and analyzing their spontaneous expressive language abilities in both Spanish and English, Cornejo made the following observations:

1. English is the dominant language of the subjects.
2. Even though Spanish is used at home, its structure and phonology are influenced by English.
3. There is interference from English to Spanish.
4. The interference from Spanish to English is highly significant at the phonological level, but minor at the lexical and grammatical levels.

Hepworth (1974) very vaguely describes the outcome of many bilingual school programs in various U.S. cities. The programs taught school subjects to Spanish American children in the native language (Spanish), with the purpose of introducing English as a second language. In the move from monolingualism (Spanish) to bilingualism, English was effortlessly acquired by the children. However, linguistic skills in Spanish were not maintained at all and the children became essentially monolingual again (English).

Controlled investigations. A study carried out by Carrow (1971) revealed that bilingualism had negative effects on both the primary and secondary language development of a group of preschool Mexican-American children from a low socio-economic level in Houston. The main purposes of the study were 1) to compare the comprehension of English with that of Spanish in the group of Mexican-American children and 2) to compare these developmental sequences of both languages in the children under study with the performance of a group of English-speaking children reported earlier in the literature.

The subjects were 99 children with Mexican-American surnames, ages 3 years 10 months to 6 years 9 months. Each child was administered the Auditory Test for Language Comprehension in Spanish and English. This test is an instrument that allows the assessment of oral language comprehension in such language structures

as pronominal reference, negation, tense marker comprehension, adjectives, prepositions, pluralization and lexical items. Generally, the children varied widely in the extent to which they understood the two languages. The greater proportion of the ninety-nine children understood English better than Spanish. It was further revealed that the bilingual children's comprehension of both English and Spanish was delayed when compared with the comprehension abilities of the children in the monolingual Anglo-American control group.

Another study (Carrow, 1972) compared the group of bilingual children discussed in the previous study (Carrow, 1971) with a group of monolingual Anglo-American children of comparable age and social status in a test of auditory comprehension of English. Once again, the test instrument employed was the Auditory Test for Language Comprehension (Carrow, 1968), which permits the assessment of oral language comprehension of English and Spanish without requiring language expression. Both groups of children were tested by the same examiner. The results showed that the bilingual children made a significantly greater number of errors than did the monolingual children in all linguistic areas tested except verbs. Carrow (1972) further concluded that in general a language delay is initiated in Mexican-American children of a low socioeconomic level during the preschool years.

Politzer and Ramirez (1973) compared the English language expression abilities of bilingual Mexican-American children in the early primary grades in a bilingual school and a monolingual school. The children were asked to tell the story of a silent movie they had watched immediately before being interviewed. Their speech samples were recorded on tape and transcribed. Deviations from standard English were counted and categorized. One of the main findings of the study was that the children in the bilingual school did not significantly differ from those in the monolingual school with respect to the frequency and amount of morphological, syntactical and lexical errors made while speaking English. This indicates that bilingual children receiving schooling in both the native and non-native languages are no more delayed in their spoken English abilities than are comparable children receiving schooling in the non-native language exclusively. The other main finding was that interference from Spanish caused several significant deviations from standard English in the speech of these children. These results indicate that bilingualism had negative effects on the acquisition of the second language.

Summary of the review of effects of bilingualism on language acquisition

The literature reviewed still does not answer the questions "Is this phenomenon of bilingualism a curse or a blessing? Or is it neither?" (Jensen, 1962a).

Bilingualism is a highly complex subject and the answer to the question is not an easy one. Comparing the many observations made and studies performed is like "comparing apples and oranges." The conclusions reached are difficult to generalize as the various observations and investigations involved subjects with a wide variety of characteristics and abilities. The most accurate generalizations that seem to be indicated by the review of the literature are the following:

- 1) Many of the results reported are conflicting and contradictory. Specific examples are:
 - a. Cornejo (1973) states that even though Spanish is used at home, there is interference from English to Spanish. Ramirez and Politzer (1974) state that there is no effect on the primary language (Spanish) if it is continuously used at home.
 - b. Many authors previously cited in this review of literature assert there is interference from the primary language hindering non-native language acquisition. Zierer (1974), Lambert, Just, and Segalowitz (1970), Lambert and Tucker (1974), and Hepworth (1974) have reported various results which directly contradict this.
 - c. Several authors including Carrow (1971), Cornejo (1973), and Hepworth (1974) present evidence that bilingualism has a negative effect on the maintenance of the native language. Other authors including Lambert, Just and Segalowitz (1970), Lambert and Tucker (1974), and Zierer (1974) reported that the primary language remains intact.
 - d. Cornejo (1973) specifically states that interference from Spanish to English is minor at the lexical and grammatical levels. Several authors (Carrow, 1972; Matluck and Mace, 1973; and Politzer and Ramirez, 1973) reveal that interference is the greatest at these linguistic levels.

- 2) Socioenvironmental and intellectual variables have been shown to relate to the language proficiency of a group of bilingual children.
- 3) The poor linguistic development of bilingual children reported by several observers and investigators may be a result of exposure to poor language models and not bilingualism, per se.
- 4) Bilingualism has either positive or no effects on middle class children of average intelligence from Canadian-American homes.
- 5) Bilingualism has various negative effects on the language development of Mexican-American children from low socioeconomic backgrounds.
- 6) The confusing and conflicting observations have indicated that a need remains to examine bilingual groups other than Mexican-Americans or Canadian-Americans and to determine whether bilingualism has the same effects in socioeconomic environments in which the quality of the language environment is high, and whether the ability to learn two languages well is influenced by intelligence. Judgements as to the total effects of bilingualism should be deferred until such studies are available.

Morphology Tests

Berko (1958) carried out a classic study which examined children's productive knowledge of English morphology using nonsense words. The children she studied ranged from four to seven years of age. The rationale for using nonsense words rather than real words was to enable the examiner to be certain that the task required use of morphological rules and not just memory and imitation. In this fashion it could be ascertained whether or not children possessed rules they could generalize to new forms. A correct response indicated that the child had mastered adult morphological rules. The choice of test items was based on the vocabulary of first grade children and a frequency inventory of morphological features.

The morphemes which Berko tested were the plural, the third person singular of the verb, the progressive, the past tense, the two possessives, and the comparative and superlative of the adjective. One of the major conclusions Berko drew from her study was that the answers were consistent and orderly even though they were not always correct so far as English is concerned. She further concluded that children in this age range operate with clearly delimited morphological rules.

Natalicio and Natalicio (1969) indicated that Berko's work of 1958 represented one of the most important steps in linguistic investigation. This is evidenced by the fact that within just the past decade, numerous investigators carried out studies employing the basic method introduced by Berko (1958). For example, Ainsfeld and Tucker (1967) studied the productive and receptive control of pluralization rules of six-year-old American children; Natalicio and Natalicio (1971) studied productive control of English pluralization rules by native and non-native English speakers. Cooper (1967) reported on the ability of deaf and hearing children to apply morphological rules; Shriner and Miner (1968) reported on the ability of economically deprived children to apply morphological rules. Several investigators (Newfield and Schlanger, 1968; Dever and Gardner, 1970; Dever, 1972) used Berko's design and reported on the ability of mentally retarded children to use morphological

structures. Ivimey (1975) used the same basic method to study the formation and use of morphological rules in a large sample of English school children living in London.

Many of these published studies demonstrate the validity of Berko's test of morphology by showing its ability to identify those children who have difficulty in generalizing morphological rules to new word forms. Several of the previously cited researchers reported the ability of Berko's test to discriminate between deaf and hearing children, normal and mentally retarded children and native and non-native English speaking children in their ability to apply morphological rules. Several of the studies revealed that the ability to supply the correct inflections of nonsense words increased with age. (These differences produced between age groups by the Berko test scores also seem to indicate its validity.)

Berry and Talbott (Berry, 1966) published a language test adapted from Berko's methods designed to assess features of English morphology most commonly represented in the vocabulary of the first-grade child. As did Berko, Berry and Talbott used nonsense figures to elicit the correct inflections in sentence completion tasks. Although, based on their preliminary studies and tests, they predicted differences in the performance levels of children from five to eight years; no normative scores for the various age levels were secured.

The Grammatical Closure subtest of the Illinois Test of Psycholinguistic Abilities (Kirk, Mc Carthy and Kirk, 1968), modelled directly on Berko's test, uses meaningful lexical items to assess a child's competence in his productive knowledge of morphological rules. In this test, the examiner describes two pictures orally. One sentence is complete while in the second a word is missing and has to be remembered from the first sentence and inflected verbally by the testee. Mc Carthy and Kirk (1963) and Kirk and Kirk (1971) cite numerous studies providing the validity and reliability of the ITPA subtests.

Vogel (1977) found both the Grammatical Closure Subtest of the ITPA and the Berry-Talbott Test to be extremely valuable measures for identifying children experiencing difficulty in generating and mastering morphological rules. After administering both tests to twenty good readers and twenty dyslexics, Vogel found that the dyslexics were significantly inferior to the good readers on both measures. Her main conclusions were that poor readers may be deficient in morphological ability which may result in inefficient use of semantic and syntactic clues provided in the morphology of written language and that these children may benefit from a language intervention program designed to help them internalize complex morphological structures.

Vogel (1977) cites a study by Brittain (1970) which replicated Berko's study with first and second-grade children. Brittain found significant correlations between

inflectional performance and reading ability. It was suggested that a child of seven or eight who has not mastered the morphological rules of his language will be hampered in learning to read.

Some investigators still have reservations about the use of nonsense tests of morphology. Dever and Gardner (1970) suggest that it might be better to use real words and not nonsense words. They state:

It may be that nonsense syllables actually defeat the purpose of the test. The question is, are the nonsense syllables themselves actually a confusion factor for some subjects? The fact is that the scores are better and more regular on items which used real words as stimuli than they were on the nonsense syllables which tried to elicit the same forms. The question arises whether this is due to the possible memorization of the entire inflected form as postulated by Berko, or whether this is due to unknown factors inherent in the use of nonsense syllables. (p.179)

Johnson (1974) suggests that the Berko nonsense test of morphology may not really be testing what it purports to test due to the confusion caused by the nonsense words. Johnson gave the test to college educated adult subjects before it was administered to the children. Several of these adults failed to demonstrate control of the plural. Johnson implies that there must be something inherently wrong with the stimulus item when a college educated subject who is a monolingual native speaker of English fails to demonstrate proper productive control of the English plural.

Ivimey (1975), after replicating Berko's study, reported that a majority of the adults sampled gave technically "incorrect" responses. As a result, he stated, ". . . the widespread idea that there is a more or less stable adult norm appears to be a myth" (p.122). However, unlike Johnson (1974), Ivimey does not blame the unstability of the adult responses on an inherent fault of the use of nonsense stimuli. He states that the reason for these "incorrect" adult responses, "arose from what may be described as excessive knowledge; as linguistic sophistication increased greater deviance was demonstrated in handling the nonsense test words" (p.122).

Several investigators have used nonsense words in combination with meaningful words to assess children's ability to apply morphological rules. Miller and Ervin (1964) used familiar words and nonsense words with a group of twenty-five children. They found that the correct use of the inflection with meaningful words consistently preceded correct use with the nonsense counterparts.

Newfield and Schlanger (1968) used Berko's nonsense words and a list of meaningful words to study the acquisition of English morphology in a group of normal children and educable mentally retarded children. They found a statistically significant difference between correct responses on real words and nonsense words for both groups of children. They summarized that there is a

definite time lag between the production of correct morphological inflection forms within a context of familiar words and the generalization of these forms to unfamiliar words.

Dever and Gardner (1970) studied the performance of normal and retarded boys on Berko's test. They reported that the scores were better and more regular on items where real words were used as stimuli.

Dever (1972) compared the results of a revised version of Berko's test with the free speech of mentally retarded children. The purpose of the study was to determine if the test could predict the occurrence of errors in the free speech of educable mentally retarded children. The author concluded that real-word test stimuli were only slightly better as predictors and that both nonsense items and real word stimuli are poor indicators of mentally retarded children's ability to use inflections in their free speech.

Pettit and Gillespie (1975) compared normal children's performance on ten selected items from the Berko test and ten selected corresponding meaningful items from the Grammatic Closure subtest of the ITPA. The generalized results were that the children scored significantly higher on the ITPA items than the Berko items at every age level from three to eight years.

Summary of the review of the application of tests of morphology

A review of the literature on the previous and present application of tests of morphology indicates the following:

- 1) Morphology tests using nonsense forms adapted from the methods employed by Berko (1958) have been demonstrated to be valid test procedures to assess a youngster's ability to apply morphological rules to new word forms and to discriminate between normal (in all aspects) monolingual English speaking children and the mentally retarded; dyslexics; the deaf; and non-native speakers of English.
- 2) Morphology tests using real words have been demonstrated to be valid test procedures to assess a child's developmental level of morphological rule acquisition and to discriminate between normals and such populations as dyslexics and the mentally retarded.
- 3) The ability to apply morphological rules to meaningful words precedes the ability to apply the same rules to new word forms; OR, the use of nonsense words in sentence completion tests underestimates a child's productive knowledge of morphological rules.
- 4) Bilingual populations have been essentially ignored by investigators studying morphological rule acquisition. (An exception is a study by Natalicio and Natalicio, 1971, who compared only the acquisition of noun plurals in English in a group of native English speakers and native Spanish speakers who acquired English as a second language.). Information describing and comparing bilinguals' ability to apply morphological rules in both acquired languages as well as information regarding specific interferences of morphological rule formulation of one language on another would greatly enhance:
 - 1) the information available on the application of morphology measures and
 - 2) the conflicting information available on the effects of bilingualism on language acquisition.

Language Tests for Bilingual Students

Accurate assessment of limited English speaking and bilingual children has become a national educational concern.

An essential part of planning bilingual programs includes assessment of language dominance and proficiency. This requires a total description of the communication skills, linguistic structures, and functional usage of the child's native and non-native languages. Without adequate assessment, the implementation of special language programs and the identification of eligible students will be hindered (Silverman, Noa, and Russell, 1976). This section contains a review of commercially available tests used to assess the language proficiency and dominance of bilingual, Spanish/English speaking children. Only those instruments which contain information and evidence supporting their validity and reliability are described.

Silverman, Noa, and Russell (1976) provide a concise evaluation of twenty-four tests used to evaluate the language dominance and competence of groups of children speaking two or more of a variety of languages. The descriptions of the following first two instruments were based on the information provided by the aforementioned investigators.

Del Rio Language Screening Test (DRLST). The DRLST was devised to identify three-to seven-year-old children with deviant language performance in English and Spanish who need further evaluation. In addition, it may be used as a diagnostic instrument and as a test of bilingual proficiency. It is designed to group children into three language categories: 1) English speaking

Anglo-American children, 2) predominantly English speaking Mexican-American children, and 3) predominantly Spanish speaking Mexican-American children.

The DRLST consists of five separate subtests. The "Receptive Vocabulary" subtest assesses comprehension of single nouns and verbs. The "Sentence Repetition Length" subtest measures memory for a string of grammatically related words. The "Sentence Repetition-Complexity" subtest assesses ability to repeat short sentences which gradually increase in grammatical complexity. The "Oral Commands" subtest evaluates memory for increasing numbers of oral commands. The "Story Comprehension" subtest evaluates a child's memory for information presented in brief stories.

Validity of the DRLST: Scores on the DRLST for each of the three main groups discussed earlier were compared. Norms for each of the three language categories differed significantly (.001 level of confidence). In addition, the test developers feel that the five subtests assess some of the basic components of language development. The "Sentence Repetition-Complexity" test was organized using hierarchies of syntactic development cited in research studies.

Reliability of the DRLST: From each main group thirty-two subjects were randomly selected for retesting exactly two weeks after the initial administration of the test. Reliability was computed using Spearman's

rank-order correlation procedure for matched groups. All correlation coefficients are significant beyond the .01 level of confidence.

Pictorial Test of Bilingualism and Language Dominance (PTBLD). The primary objective of the PTBLD is to determine four-to eight-year-old children's language facility in Spanish and English. The results obtained from Part I of the test are used to place children in one of six diagnostic categories: 1) English dominant, 2) Spanish dominant, 3) bilingual, 4) language deficient, 5) further testing advised for possible learning and language disorders or mental retardation, and 6) pseudo-bilingual. Oral vocabulary is used as the basis for these determinations. Part II provides information on the child's use of language structures in both Spanish and English.

For Part I of the PTBLD the subject is shown a picture, asked what it is, and is requested to respond orally in both Spanish and English. For Part II of the test, the child is shown a picture and is asked to tell a story in English or Spanish about what he sees. Then the child is asked to tell the story again in the other language. All responses are recorded. Correct answers for Part I of the PTBLD are specified in the manual. For Part II, the rules for classifying responses according to level, based on grammatical correctness and thought completion, are given in the manual.

Validity of the PTBLD (Part I): Part I was administered to a group of 176 Mexican-American children who had already been classified into two groups: Spanish dominant and English dominant. Results suggest that the test does differentiate between English and Spanish dominant language preferences. A second study supporting the validity of Part I involves a sample of Mexican-American children who had taken both the Peabody Picture Vocabulary Test (PPVT) and Part I of the PTBLD within a three-week time period. A significant correlation (.05 level of confidence) was found between the English and total oral vocabulary scores on Part I of the PTBLD and the PPVT.

Validity of the PTBLD (Part II): The two pictures that comprise Part II were shown to two hundred Mexican-American children in grades kindergarten through third. Analysis of the children's recorded answers indicated that the responses could be rated into four distinct levels of oral language facility.

Reliability of the PTBLD: Two student samples selected from kindergarten and first grade were retested after two-month and six-month intervals, respectively, on Part I. Coefficients were reported as high. No reliability studies for Part II of the PTBLD were reported.

The James Language Dominance Test. The James Language Dominance Test (James, 1974) measures both comprehension and word production abilities in kindergarten and first grade children in Spanish and English. It was designed to

determine language dominance. Five categories of dominance are identified: 1) Spanish dominant, 2) bilingual with Spanish as home language, 3) bilingual with English and Spanish as home languages, 4) English dominant, but bilingual in comprehension, and 5) English dominant.

The test is administered to individual children. The examiner asks questions first in Spanish, then in English; the child responds both orally and by pointing to pictures in the test book. All responses are recorded by the examiner. Using the child's scores and the language classification guide provided in the test manual, the student may be placed into one of the five specified categories of language dominance.

Validity of the James Language Dominance Test: James (1974) presented evidence that the test is valid with respect to content and predictive validity. He also demonstrated, through a review of group norms, and analysis of expectancy tables, and a multiple discriminant analysis, that the differences between each of the five linguistic categories are sufficient to accurately classify children into any of the five mentioned categories.

Reliability of the James Language Dominance Test: The test was administered to three first-grade classes of Mexican-American children in Austin, Texas. Six months later the same children were retested. The classifications obtained by the second testing were

in 98% agreement with the classifications of the first testing.

Screening Test of Spanish Grammar (STSG). The STSG (Toronto, 1973) was designed to identify 3-to 6-years, 11-months-old Spanish-speaking children who do not demonstrate native language (Spanish) syntactic proficiency commensurate with their age. The test is concerned with the grammatical proficiency of Spanish speaking children, not with their phonological or vocabulary skills. The STSG is meant to be used as a syntax screening device only, not as an in-depth or complete language assessment.

The STSG consists of a receptive (comprehension) and an expressive subtest, each testing twenty-three syntactic structures. The structures are presented in paired sentences which differ in only a single syntactic element. There are four pictures for each receptive item; two correspond to the test sentences and two are decoys. The examiner first says both sentences and then after repeating one of the sentences, the child is asked to point to the picture representing that sentence. On the expressive portion of the test there are only two pictures per item which correspond to the sentences. The examiner first says both of the sentences and then points to one of the pictures. The child is asked to produce from memory the corresponding sentence. Using the child's scores and the normal percentiles and standard deviations provided in the test manual for Mexican-American and Puerto-Rican-American

children, it can be determined whether further language evaluation is necessary.

Validity of the STSG: Toronto (1973) stated that validity was indicated by the significant differences produced between age groups by the STSG scores. As age increased, the scores which supposedly measured increased grammatical proficiency did, in fact, increase significantly.

Reliability of the STSG: Twelve subjects each from the Mexican-American group and the Puerto Rican-American group were retested with the STSG after a one-week period. The test-retest reliability coefficients were .69 and .91 for the Mexican-American children on the receptive and expressive subtests respectively; for the Puerto Rican-American group the reliability coefficients were .62 and .72 on the receptive and expressive subtests respectively.

Test for Auditory Comprehension of Language (TACL).

The TACL (Carrow, 1974) was designed to measure auditory comprehension of language structures in Spanish and English in children of three to six years eleven months. Performance on specific items and groups of items allows the examiner to determine the areas of linguistic difficulty. The test permits the assessment of oral language comprehension without requiring language expression from the child. The TACL consists of 101 plates of line drawings. The pictures represent referential categories

and contrasts that can be signaled by form classes and function words, morphological constructions, grammatical categories, and syntactic structures. The examiner questions the child, who responds by pointing to the correct picture in the test booklet.

Normative data are available only for the English language version. The TACL manual states that the child may be assigned to a developmental level of comprehension in each language. However, norms exist only for the English version. Consequently, the English version norms must be used for assigning the child to a developmental level of comprehension in Spanish. In addition, the Spanish version of the TACL is a direct translation of the English test questions. The practice of merely translating English questions to Spanish for evaluating the bilingual child is criticized later in this section of the review of literature.

Validity of the TACL: Carrow (1974) presents good evidence to prove the validity of the English version of the TACL. No studies are reported on the validity of the Spanish version.

Reliability of the TACL: The English version of the TACL was administered to a group of fifty-one children. The Spanish TACL was administered to a group of thirty-two Mexican-American children. All were retested within a two-week interval. The reliability scores were .94 for the English version and .93 for the Spanish version.

Other diagnostic measures for evaluation of language in young Spanish-speaking children consist of 1) unstandardized translations of tests into Spanish developed for English-speaking children living in the United States (Clevenger, 1974) and 2) instruments which have no evidence of their reliability and/or validity (Silverman, Noa, and Russell, 1976). Diagnostic measures of these types are not described in this review as many investigators (Zirkel, 1972; Garcia, 1973; Clevenger, 1974; Silverman, Noa and Russell, 1976; Rueda and Perozzi, 1977) feel that classification or instructional decisions based on such test results cannot be made with confidence.

Zirkel (1972) and Garcia (1973) have stated that the translation of English language tests into Spanish is an inappropriate means for measuring Spanish-speaking children's linguistic abilities because the translated tests often reflect cultural and linguistic values which may not be found among the Spanish speaking population. The participants of the Bay Area Bilingual Education League Conference (1969) stressed the importance of devising language tests which are derived from the native language of the testee and are not just translations from existing measures.

Rueda and Perozzi (1977) presented a detailed critique of the Spanish version of the TACL (Carrow, 1974). After analyzing the test and administering it to twenty Mexican-American children of normal intelligence, they indicated that the test's usability is questionable

because of translation difficulties and ambiguous pictorial representations of stimuli. The TACL was written first in English, and the Spanish translation was made directly from the English wording, "a procedure of dubious validity," according to Rueda and Perozzi (1977). These investigators further report that it is often impossible to impart the meaning intended when a word-for-word translation is made. One example, Item 37, is the verb "catching." The TACL Spanish translation made was "pescando" which has the implication of catching fish. The correct stimulus picture is of a boy catching a baseball. Nineteen of the 20 children tested in this study missed item 37. Other examples of misleading translations and poor stimulus pictures on the TACL were described.

The aspects of validity and reliability are critical in creating accurate assessment instruments. If decisions are to be made on the basis of students' test scores, one must know what specifically the test measures and how well it accomplishes its objectives (validity). It is also important to know how stable and consistent the scores are (reliability). The tests evaluated in this section of the review of the literature deal with the classification of students into language dominance categories and identifying areas of strengths and weaknesses within specific linguistic content areas. Without evidence supporting the validity and reliability of such tests, confidence cannot be placed in their results (Siverman, Noa, and Russell, 1976).

Summary of the review of language tests for Spanish-speaking children

A review of the literature on language tests available for Spanish-speaking children indicates the following:

- 1) Language tests which have not been proven to be valid and reliable and/or are direct translations from tests originally standardized on Anglo-American children should not be used to evaluate language dominance or proficiency in Spanish-speaking children.
- 2) Several valid and reliable tests measuring Mexican-American children's language dominance in both comprehension and production are available.
- 3) Several valid and reliable tests for screening Mexican-American children's ability to receptively and expressively use various linguistic structures in Spanish and English are available. The STSG contains norms for Puerto Rican-American children as well as Mexican-American children.
- 4) Although the purpose of the screening tests are to identify the specific linguistic areas that need a more in-depth evaluation, no valid and reliable diagnostic measures permitting a more specialized evaluation of the Mexican-American or Puerto Rican-American child's linguistic abilities are available.
- 5) There are no valid and reliable diagnostic measures whatsoever for determining any of the basic aspects of language functioning in Cuban children available.
- 6) The notion of assessing bilingual students' language performance in their native and non-native languages is a new one. One indication of this fact is the extremely limited number of tests available. The need for effective assessment instruments is evident. Not only is it necessary to develop more comprehensive instruments than are currently available, new tests must be adapted to the characteristics of each language group to be evaluated. The language development of Cuban-American children has been ignored. Until language tests based on the Spanish spoken by Cuban children are devised, the

evaluation of the linguistic skills of the large number of Cuban-American children in the United States will not be maximally effective.

Statement of the Problem

As evidenced by a review of the literature, it can be seen that there is much conflicting evidence as to the effects of bilingualism on language development; there is a poverty of research in the specific area of morphological rule acquisition; and the language development of Cuban-American children living in the United States has largely been ignored. Consequently, there are no valid and reliable measures for assessing their linguistic development.

The purposes of this research are to determine the effects of bilingualism on the native and non-native language development of children of normal intelligence from economically advantaged backgrounds, to obtain information on the acquisition of morphological rules in bilinguals, and to develop an effective diagnostic instrument which can be used to assess the linguistic skills of Cuban-American children. The specific goals of this investigation are:

1. To devise a standardized instrument for use in the evaluation of the linguistic development of the Spanish and English spoken by bilingual Cuban-American children.
2. To analyze the developmental sequences of morphological rule acquisition in the two languages of these children.

3. To determine if there are significant differences between morphological responses to test using nonsense and meaningful words in Spanish and English.
4. To compare the ability of the Cuban-American children to apply morphological rules in English and Spanish. These results will be compared with the commercially available language dominance measure using lexicon stimuli which previously classified the children as being bilingual in both Spanish and English comprehension and production.
5. To determine the effect bilingualism has on non-native language acquisition by comparing the developmental sequences of the English spoken by bilingual Cuban-American children with the English spoken by monolingual American children.
6. To determine the effect bilingualism has on native language development by comparing a sample of Spanish dominant children and bilingual children in their ability to apply Spanish morphological rules.
7. To look for consistencies of error production and to gain an understanding of bilingual interference in the language learning of the specific bilingual group-- Cuban-American.

CHAPTER II

METHODS AND PROCEDURES

Subjects

The subjects used in this study were 122 bilingual Spanish/English speaking elementary school aged children, 31 each in kindergarten and third grade, 30 each in the first and second grade, and 19 Spanish dominant kindergarten children. All children were considered by their individual teachers and through examination of school records to be normal with respect to intellectual ability, hearing, speech, vision, and language, social and physical development. In addition, the children were required to meet the following criteria:

- a. All children were born and raised in Miami, Florida, and were of Cuban born parents.
- b. Spanish was the primary language spoken at home by both parents.

Subjects were drawn from a Dade County Public School located in the predominantly Cuban community of Miami, Florida, known as "Little Havana." All academic instruction was provided in English. The children did attend Spanish class for $\frac{1}{2}$ hour daily. Each child came from middle and lower middle class home environments as judged by the school principal's knowledge of the community and types of

homes in which the children lived. This was supported by an examination of school records which indicated the occupations of the subjects' parents. Mothers were predominantly housewives; fathers were mainly plumbers, mechanics, carpenters, construction workers, cooks or bakers, bus drivers, butchers, shop owners or salesman. A few were teachers in the Dade County Public School System.

The chronological age range of the 19 Spanish dominant kindergarten children was from five years, four months to six years, four months with a mean age of five years, eleven months. There were 10 males and 9 females. See Table 1 for a description of the bilingual subjects.

The degree of the children's bilingualism was carefully controlled and measured in this study. Both teachers' evaluations of students' bilingualism and the students' performance on a standardized, commercially available diagnostic test of language dominance and bilingualism were used to categorize subjects as either bilingual or Spanish dominant for this study.

Each subject was first administered the James Language Dominance Test (JLDT) which is designed to assess the language dominance of Spanish/English speaking children. (A complete description of the JLDT including information on its validity and reliability is on page 26 of the Review of Literature section.) For purposes of this investigation children were considered bilingual if their

Table 1 Description of bilingual subjects in terms of CA and sex for each grade level tested.

<u>GRADE</u>	<u>N</u>	<u>MALES</u>	<u>FEMALES</u>	<u>MEAN CA</u>	<u>CA RANGE</u>
K	31	16	15	6-0	5-4 to 6-6
1st	30	16	14	7-2	6-4 to 8-2
2nd	30	15	15	8-3	7-4 to 8-11
3rd	31	16	15	8-11	8-4 to 9-9

JLDT scores categorized them either as Bilingual in Comprehension and Production with Spanish as a Home Language or Bilingual with English and Spanish as the Home Language. Nineteen kindergarten children obtained JLDT scores categorizing them as Spanish Dominant. (Approximately 3 days elapsed between the administration of the JLDT and any further testing.)

The JLDT Manual provides language group norms for the receptive and expressive vocabulary development of the normal children used in the standardization sample of the JLDT. Table 2 shows these means and standard deviations. Based on these norms, any child who scored lower than 17 and 14 on the comprehension and expression subtests, respectively, of the JLDT in Spanish or English were excluded from the present study. This procedure further assured that subjects met the criterion of having normal intellectual and language development.

Materials

Two 42-item morphology tests were constructed to assess the ability of bilingual Cuban-American children to produce grammatical morphemes in Spanish and English. The Spanish version is hereafter referred to as the Bilingual Morphology Measure-Spanish Version or BMM-S and the English version is termed the Bilingual Morphology Measure-English Version or BMM-E. These were adapted from the techniques employed by Berko (1958) and Berry and Talbott (Berry , 1966). Each version used 21 nonsense words to determine if the subjects were able to produce the correct

Table 2 James Language Dominance Test language group norms for bilingual kindergarten and first grade children and Spanish dominant kindergarten children.

GROUPS	GRADE	N	COMPREHENSION				PRODUCTION			
			SPANISH		ENGLISH		SPANISH		ENGLISH	
			$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
Spanish Dominant	K	264	19.4	1.32	13.9	5.12	16.7	2.37	8.4	4.3
Bilingual-Spanish as Home Language	K	102	19.5	.79	18.3	2.39	18.0	2.0	14.6	1.99
	1st	71	19.6	.66	18.5	2.54	18.3	1.65	15.3	1.50
Bilingual-Spanish and English as Home Language	K	158	19.0	1.43	19.0	1.74	15.7	2.51	15.9	2.45
	1st	106	19.3	.94	19.7	.59	16.7	1.75	18.0	1.72

morphological forms with nonsense stimuli and 21 meaningful words which paralleled the nonsense items morphologically, and phonologically wherever possible. Color drawings of cartoon-like animals and cartoon-like people performing actions were the visual stimuli for the semantically non-meaningful subtests. Color drawings of real animals, objects and people representing the real words were the visual stimuli for meaningful items. Drawings were mounted on cards.

The choice of the inflectional morphemes to be investigated in this study was based on two main factors:

- a) that they be representative of the most frequently occurring forms in the language of children in the early elementary years and, in order to be better able to compare the bilingual children's performance with other populations
- b) that they be forms assessed in a variety of previous studies about children's morphological development.

Table 3 describes the morphemes examined and the corresponding nonsense and lexical items tested by the BMM-E test instrument. Table 4 describes the categories and items examined by the BMM-S test instrument.

Testing Procedures

Two bilingual examiners completed all testing. An examiner of Cuban descent, fluent in Spanish and English, administered the BMM-S to all of the bilingual and Spanish dominant children. A bilingual American born native speaker of

Table 3 The following is a list of the semantically non-meaningful and lexical items represented in the plates of the Bilingual Morphology Measure-English Version (BMM-E) test instrument

GRAMMATICAL CATEGORY	NONSENSE ITEM TESTED	LEXICAL ITEM TESTED
plural /s/	mooks	sticks
plural /z/	luns	lions
	wugs	dogs
	cras	keys
plural /əz/	gutches	watches
	tasses	glasses
	nizzes	noses
regular past tense /t/	ricked	picked
regular past tense /d/	bomed	climbed
	spowed	cried
regular past tense /əd/	motted	melted
present progressive	zibbing	painting
derived agentive	zibber	painter
*present tense	kleats	eats
	fonces	dances
comparison of adjective	quirkier	bigger
superlative of adjective	quirkiest	biggest
singular possessive	niz' hat	girl's hat
	wug's hat	dog's hat
plural possessive	nizzes' hats	girls' hats
	wugs' hats	dogs' hats
*third person singular		

Table 4 The following is a list of the semantically non-meaningful and lexical items represented in the plates of the Bilingual Morphology Measure-Spanish Version (BMM-S) test instrument

GRAMMATICAL CATEGORY	NONSENSE ITEM TESTED	LEXICAL ITEM TESTED
plural /s/	nerras litos raves	palos perros llaves
plural /es/	pirones micas mubies tapices deyes	leones animales rubies narices reyes
*regular past tense -ar verb	bantó	lloró
*regular past tense -er verb	molió	recogió
*regular past tense -ir verb	forrió	derretió
present progressive	fintando	pintando
derived agentive	fintór	pintór
*present tense	lunta dobe	baila come
comparison of the adjective	más mecoso	más grande
superlative of the adjective	mecosísimo	grandísimo
singular possessive feminine	de la nerra	de la niña
singular possessive masculine	del lito	del perro
plural possessive feminine	de las nerras	de las niñas
plural possessive masculine	de los litos	de los perros
*third person singular		

English administered the Bilingual Morphology Measure-English Version to the bilingual subjects in English. Both examiners were thoroughly trained in the administration of the BMM and in response recording.

Each child was seen individually by one of the examiners. While one child received the BMM-S in a small testing room at his school, another child was receiving the BMM-E in a different testing area. In this way, half the children at each grade level received the English version before the Spanish version. The other 50% of the subjects initially received the Spanish version. The semantically non-meaningful subtest of each version was always administered before the real word subtest.

The examiners always conversed with the children prior to test administration to establish rapport. The Cuban examiner spoke only Spanish to the children, the American examiner spoke only English. Johnson (1974) reports that in studies of children of two ethnic identities, only one test administrator may well be a liability. Before administering the BMM certain instructions were given to the children. The examiners told the children (in the respective languages), "I'm going to show you some pictures of things you have never seen before. Listen very carefully because I will ask you some questions about them." Each child was given two practice items (noun plurals) to ensure knowledge of the task before beginning the actual test. If a child missed

any of the practice items, the correct answer was taught and the question repeated until the child responded correctly. Generally the children caught on quickly and understood what was required of them.

Productive knowledge of the morphological rules was assessed by requiring the children to modify nonsense or lexicon words that cued a picture. The children had to complete a statement with certain contextual clues spoken by the examiner while looking at a related drawing. For example, a subject was shown a drawing of a cartoon-like man performing a juggling type activity. The examiner would then say, "This man knows how to zib. What is he doing? He is _____." If the subject responded "zibbing," evidence existed that he had productive ability to apply a generative rule for the progressive inflection. The corresponding item on the meaningful subtest included a drawing of a real man painting a fence. The examiner's statement to the child was, "This man knows how to paint. What is he doing? He is _____." A more complete description of test administration procedures is in Appendix A.

Six scores were obtained from the Bilingual Morphology Measure: a score on the semantically non-meaningful subtest of the BMM-E based on 21 items, a score on the real word subtest of the BMM-E based on 21 items, a total score on the BMM-E based on all 42 items, a score on the non-meaningful subtest of the BMM-S based on 21 items, a

score on the real word subtest of the BMM-S based on 21 items, and a total score on the BMM-S based on all 42 items. Some of the items testing productive knowledge of the inflectional rules had more than one possible answer. In such cases, credit was given to those responses for which a grammatically correct English or Spanish model could be found. A description of the specified types of responses considered to be quantitatively appropriate and inappropriate for both the BMM-E and BMM-S is provided in Appendix B.

Data Analysis

One-way analysis of variance was used to test for significant differences between grade levels for all BMM-E and BMM-S scores. In addition, linear trend analysis was performed on the mean scores to further investigate significant differences across grade levels. A priori contrasts between separate grade levels were also performed using the t statistic.

A t test was used to test for significant differences within grade levels for BMM-E scores vs. BMM-S scores as well as for BMM-E nonsense vs. BMM-E meaningful and BMM-S nonsense vs. BMM-S meaningful mean scores.

Kuder-Richardson 21 reliability estimates were computed for all grade levels combined for all scores (BMM-E nonsense, meaningful and total; BMM-S nonsense, meaningful and total).

Group means, medians, standard deviations and percentile rank equivalents for the raw scores of each grade level were computed for all scores. Percentages of correct responses of each item tested were also computed for each grade level.

A t test was used to test for significant differences between the Spanish dominant and bilingual kindergarten children's scores on the Bilingual Morphology Measure-Spanish Version.

CHAPTER III

RESULTS AND DISCUSSION

Introduction

The results of this investigation are reported in three sections. The first section presents the results of this investigator's efforts to develop a diagnostic instrument (Bilingual Morphology Measure) to objectively assess certain language skills of Spanish/English bilingual children. These will be the results related to specific goal #1 described in the Statement of the Problem section of this paper: to develop a standardized instrument that may be used in the evaluation of the linguistic development of the Spanish and English spoken by bilingual Cuban-American children. The second section presents the data pertaining to morphological rule acquisition by these subjects. The results discussed relate to specific goal #2: to analyze the developmental sequences of morphological rule acquisition in the two languages of these children and goal #3: to determine if there are significant differences between morphological responses to tests using nonsense and meaningful words in Spanish and English. The third section presents the results relevant to bilingualism and its effects on language development (specific goals #4,5, 6,7 on page 35 in Chapter I.)

Results and Discussion

Bilingual Morphology Measure (BMM)

Nature and rationale. The Bilingual Morphology Measure provides one of the few sets of language evaluation materials and norms that have been developed directly from the language of the Cuban population within the United States. The BMM was designed to identify through individual testing those bilingual children who do not demonstrate morphological rule proficiency commensurate with their grade level. More specifically, the BMM was designed to determine the various morphological rules the bilingual child has and does not have in Spanish and English. It will help the teacher of the Spanish-speaking child in American schools determine whether a child's poor verbal performance in English might be due to language differences (this would be indicated if the child scored within one standard deviation of the mean for his grade level on the BMM-S but more than one standard deviation below the corresponding mean on the BMM-E) or language deficiencies (indicated by a score of more than one SD below the mean on both the BMM-S and BMM-E).

If a child exhibited difficulties in English, beginning to teach him those rules in English that he shows a deficit in or lacks completely in Spanish may be frustrating for both teacher and child. The wiser procedure would be to administer both versions of the BMM and to

first proceed by teaching the child the morphological rules that are intact in Spanish but lacking in English. If the BMM-S determines that the child is performing below grade level norms in Spanish, the appropriate school personnel should consider providing language remediation in the native language first.

Group differences. Analysis of variance revealed that for both the nonsense and meaningful subtests of both the BMM-E and BMM-S scores increased significantly (.001 level of confidence) across grade levels from kindergarten through third grade, indicating that the BMM was measuring a developmental phenomenon. Table 5 describes the results of this statistical analysis including the linear trend analysis performed.

Reliability. Thirty-eight subjects, 19 Spanish dominant children and 19 of the bilingual subjects, were tested twice to obtain measure of test-retest reliability. The Spanish dominant children were retested with the BMM-S exactly one week after receiving the test the first time. The retest was administered by the same bilingual Cuban examiner. The same American examiner administered a retest of the BMM-E one week after the first administration to 19 of the bilingual subjects. The scores of the bilingual children receiving the retest of the English version of the BMM were compared with the original test scores of the same 19 children.

Table 5 Description of linear trend analysis and analysis of variance for significant differences between grade levels for all morphology tests.

TEST	Analysis of Variance			Linear Trend	
	F-ratio	df	p	F-ratio	df p
BMM-S Nonsense	11.443	3	.00001	26.643	1 .00001
BMM-S Meaningful	22.348	3	.00001	65.200	1 .00001
BMM-S Total	18.188	3	.00001	48.945	1 .00001
BMM-E Nonsense	28.813	3	.00001	80.966	1 .00001
BMM-E Meaningful	49.373	3	.00001	144.068	1 .01
BMM-E Total	42.345	3	.00001	123.814	1 .01

Test-retest reliability was computed using Pearson Correlation Coefficients. All test-retest correlation coefficients indicated high test-retest reliability ($p < .0001$). The results are presented in Table 6. The means and standard deviations for each subtest at the two testings are quite consistent as shown in Table 7.

Kuder Richardson-21 reliability coefficients were also computed. This is used as an estimate of test-retest reliability. Coefficients ranged from .66 to .90. This is also an indicator of high internal consistency (the degree to which all the items measure the same thing). KR coefficients are reported in Table 8.

Validity. The validity of the Bilingual Morphology Measure has been demonstrated in two ways. First, since the instrument is a test of some early stages of expressive language ability, it should follow the same trends that language follows in children. That is, it should be developmental; increase in age should be paralleled by increasing score. Validity was indicated by the significant differences produced between grade levels by the BMM scores and the presence of significant linear trends. As age increased, the scores which purported to measure increased morphological proficiency increased significantly, indicating that morphological development was, in fact being measured.

Second, there is preliminary evidence to show that the BMM distinguishes between children who have delayed

Table 6 Pearson Correlation Coefficients and P-values
for children given test and retest.

	<u>Correlation</u>	<u>p-value</u>
BMM-S Nonsense	0.9205	..0001
BMM-S Meaningful	0.8837	.0001
BMM-S Total	0.9256	.0001
BMM-E Nonsense	0.9114	.0001
BMM-E Meaningful	0.9688	.0001
BMM-E Total	0.9419	.0001

Table 7 Means and standard deviations for children
given test and retest.

	<u>Test</u>		<u>Retest</u>	
	<u>$\bar{x}$</u>	<u>SD</u>	<u>$\bar{x}$</u>	<u>SD</u>
BMM-S Nonsense	6.94	3.43	7.53	2.68
BMM-S Meaningful	12.89	3.04	13.05	2.68
BMM-S Total	19.83	6.06	20.58	5.02
BMM-E Nonsense	7.47	2.82	8.68	2.57
BMM-E Meaningful	11.89	2.67	12.10	2.31
BMM-E Total	19.32	4.87	20.78	4.30

Table 8 Kuder Richardson Reliability Coefficients

<u>TEST</u>	<u>COEFFICIENT</u>
BMM-S Nonsense	.70
BMM-S Meaningful	.66
BMM-S Total	.81
BMM-E Nonsense	.83
BMM-E Meaningful	.81
BMM-E Total	.90

language and those who do not. This investigator administered the BMM-S to nine kindergarten children whose scores ranged from 10-16 and 8-13 on the comprehension and expression subtests, respectively, of the James Language Dominance Test. These scores are below grade level norms for kindergarten on the JLDT. In addition, these children's teachers had initially identified them as being generally slow to comprehend instructions and directions for kindergarten activities. The mean scores on the BMM-S of these children are contrasted with those of the Spanish dominant and normal bilingual kindergarten children used in the standardization of the BMM. (See Table 9.)

Norms. Grade level medians, means, and standard deviations are presented in Table 10. Table 11 gives percentile rank equivalents for the total raw scores of the BMM-E by grade level. Table 12 gives the corresponding percentile rank equivalents for the BMM-S.

Table 9 Means of language delayed, normal Spanish dominant, and normal bilingual kindergarten children tested with the BMM-S.

SUBJECTS	<u>BMM-S Nonsense $\bar{x}$</u>	<u>BMM-S Meaningful $\bar{x}$</u>
Delayed Language	5.22	8.00
Spanish Dominant	7.47	11.89
Bilingual	11.26	14.77

Table 10 Medians, means and standard deviations of BMM for all bilingual children tested.

Grade	N	Mean Age	BILINGUAL MORPHOLOGY MEASURE - ENGLISH								
			Nonsense			Meaningful			Total		
			Median	Mean	SD	Median	Mean	SD	Median	Mean	SD
K	31	6-0	8.0	7.65	3.31	13.0	12.90	2.79	21.0	20.55	5.63
1st	30	7-2	10.0	10.63	4.18	16.0	16.50	3.33	26.0	27.13	7.09
2nd	30	8-3	11.0	11.50	2.92	18.5	18.33	2.14	29.5	29.83	4.54
3rd	31	8-11	17.0	15.94	3.46	21.0	20.39	1.07	38.0	36.32	4.31
BILINGUAL MORPHOLOGY MEASURE - SPANISH											
K	31	6-0	12.0	11.26	2.20	15.0	14.77	1.72	27.0	26.03	3.61
1st	30	7-2	12.0	12.40	2.23	16.0	16.13	1.69	28.0	28.53	3.46
2nd	30	8-3	12.0	12.13	2.40	17.0	16.80	1.89	29.5	28.93	3.87
3rd	31	8-11	16.0	14.84	3.00	19.0	18.52	1.92	35.0	33.36	4.57

Table 11 Percentile rank equivalents for the BMM-E Toal raw scores by grade level.

KINDERGARTEN		FIRST GRADE		SECOND GRADE		THIRD GRADE	
percentile	raw score	percentile	raw score	percentile	raw score	percentile	raw score
98	29	98	40	98	38	98	42
94	28	93	39	95	37	90	41
84	27	87	38	88	36	81	40
76	26	82	35	80	35	69	39
73	25	78	34	75	34	55	38
69	24	75	33	72	33	45	37
61	22	72	32	67	32	35	36
48	21	65	28	60	31	26	35
39	20	62	27	53	30	21	32
34	19	50	26	48	29	18	31
31	17	37	25	43	28	13	30
27	16	32	24	32	27	8	29
16	15	28	23	20	26	5	28
5	8	25	22	15	25	2	25
2	7	22	21	10	24		
		17	19	5	23		
		12	18	2	21		
		7	17				
		2	16				

Table 12 Percentile rank equivalents for the BMM-S Total raw scores by grade level.

KINDERGARTEN		FIRST GRADE		SECOND GRADE		THIRD GRADE	
<u>percentile</u>	<u>raw score</u>	<u>percentile</u>	<u>raw score</u>	<u>percentile</u>	<u>raw score</u>	<u>percentile</u>	<u>raw score</u>
98	34	97	35	98	36	98	39
94	30	90	34	95	35	94	38
85	29	82	32	90	34	81	37
69	28	72	30	85	33	63	36
50	27	62	29	75	32	48	35
39	26	48	28	65	31	40	34
32	25	32	27	57	30	35	33
26	24	18	26	48	29	31	32
21	23	10	25	43	28	19	30
15	22	5	22	32	27	15	28
8	21	2	20	22	26	11	26
5	20			18	25	8	25
				13	24	5	23
				8	23		
				5	22		
				2	21		

Interpretation. Children who obtain scores below the first standard deviation from the mean of the BMM-S Total score or BMM-E Total score are probably in need of remedial language teaching. However, it must be emphasized that using a single test to judge language performance is not a sound practice, and information from other tests, case histories and observation should be considered in recommending language remediation.

BMM test items seem to be valid not only in terms of their contribution to the total test score, but also in terms of their individual contribution to the understanding of the child's language. Several items are sufficiently easy for all the children in each of the age groups to pass. Most of the items show increasing percentages of children passing with increasing grade level. Items were not selected or retained on the basis of their correlation to the total test score or their ability to discriminate between grade levels. Items were selected and retained because they evaluated the children's knowledge of specific morphological structures.

Morphological Rule Acquisition

To analyze the developmental sequences of morphological rule acquisition of all subjects to both the nonsense and meaningful stimuli presented in both Spanish and English, percentages of correct responses were calculated independently for each grade level for each inflection tested as well as for the allomorphic subdivisions within each

major morphological category of nouns, verbs, possessives, adjective, etc. Table 13 summarizes the percentages of correct responses for lexicon and nonsense words obtained for all bilingual subjects on the BMM-English Version. Table 14 summarizes the corresponding percentages for the subjects on the BMM-Spanish Version.

For ease of discussion, the items are grouped into three frequency levels of responding: 1) Items correctly responded to by 75% to 100% of the subjects at any grade level are considered to be mastered by the children; 2) items having a response frequency of 50% to 74% are considered to be in a state of learning by the children; and 3) items having a response frequency of below 50% indicate those inflections that the children have very little control of or have just not acquired.

Plurals-English. From the data given in Table 13, it appears that all the subjects possess the allomorph /-s/ and can generalize it to unfamiliar forms. The allomorph /-z/ is also mastered at the kindergarten level in lexicon words but its application to unfamiliar forms shows a decrease to 61%. By first grade /-z/ is mastered with unfamiliar forms. Incorrect responses consistently included a repetition of the nonsense or lexicon noun in its singular form. Three children over generalized the rule and responded [kizəz] for "keys." The allomorph /-əz/ for noun plural formations on meaningful lexicon words is not controlled by even the third graders but does appear

Table 13 Percentage of bilingual children correctly producing the appropriate BMM-English Version morphological forms.

CLASS		CORRECT RESPONSES		KINDERGARTEN		1ST GRADE		2ND GRADE		3RD GRADE	
		Meaningful	Nonsense	Meaningful	Nonsense	Meaningful	Nonsense	Meaningful	Nonsense	Meaningful	Nonsense
Plurals	/-s/	sticks	mooks	94	81	97	97	100	100	100	100
	/-z/	dogs	wugs	97	61	97	87	100	97	100	100
		lions	luns	94	74	97	83	100	100	100	100
		keys	cras	81	58	97	77	93	97	100	90
Verbs	/-əz/	glasses	tasses	45	0	70	23	93	13	97	52
		watches	gutches	29	6	50	20	73	23	97	26
		noses	nizzes	23	0	63	27	90	27	100	58
	/-t/	picked	ricked	32	19	70	37	87	37	90	81
	/-d/	climbed	bomed	35	23	60	40	77	40	94	81
		cried	spowed	26	16	63	27	73	40	94	77
Possessives	/-əd/	melted	motted	6	3	33	20	33	13	87	74
	/-ɪŋ/	painting	zibbing	100	74	100	90	100	80	100	100
	/-s/	eats	kleats	84	68	93	70	100	87	100	94
	/-əz/	dances	fonces	0	0	30	13	57	20	84	65
	/-z/	dog's	wug's	58	52	90	70	97	77	100	97
		girl's		58		80		93		100	
Adjectives	/-əz/		niz's		0		3		0		32
	/-ə/	dogs'	wugs'	100	90	100	100	100	97	100	97
		girls'	nizzes'	97	58	100	70	97	67	100	87
	/-ər/	bigger	quirkier	71	6	80	10	80	13	100	19
Agentive	/-əst/	biggest	quirkiest	87	35	97	43	93	70	100	94
	/-ər/	painter	zibber	77	35	83	57	97	53	100	71

Table 14 Percentage of bilingual children corrently producing the appropriate
BMM-Spanish Version morphological forms.

CLASS	CORRECT RESPONSES	KINDERGARTEN				1ST GRADE		2ND GRADE		3RD GRADE	
		Meaningful	Nonsense	Meaningful	Nonsense	Meaningful	Nonsense	Meaningful	Nonsense	Meaningful	Nonsense
Plural /-s/	palos		nerras	100	100	100	100	100	100	100	100
	perros		litos	100	100	100	100	100	100	100	100
	llaves		raves	97	84	100	100	100	100	100	100
Plural /-es/	animales		micales	26	3	57	10	63	13	81	29
	reyes		deyes	23	10	10	0	17	7	48	6
	narices		tapices	16	0	27	0	40	0	77	26
	leones		pirones	13	0	43	3	43	3	77	35
	rubies		mubies	0	0	0	0	3	3	6	0
Past Tense-ar verb	lloro'		banto'	97	61	93	73	93	67	94	77
Past Tense-ir verb	se derretio'		forrio'	94	77	100	77	100	77	100	84
Past Tense-er verb	recogio'		molio'	87	71	97	77	97	70	100	84
Present Progressive	pintando		fintando	100	77	100	83	100	77	100	94
Present Tense-ar verb	baila		lunta	84	77	93	77	100	77	97	84
Present Tense-er verb	come		dobe	94	32	97	50	97	37	100	81
Singular Possessive	de la niña		de la nerra	100	97	100	100	100	93	100	97
	del perro		del lito	100	97	100	100	100	100	100	97
Plural Possessive	de las niñas		de la nerra	94	81	97	90	100	97	100	97
	de los perros		de los litos	97	94	97	90	100	93	100	97
Comparison of Adjective	más grande		más mecoso	61	13	87	37	93	27	100	74
Superlative of Adjective	grandísimo		mecosísimo	26	6	30	27	40	23	71	42
Agentive	pintór		fintór	74	45	87	47	93	50	100	77

to be in a state of learning. Incorrect responses at all levels consisted of repetitions of the nonsense and meaningful nouns in their singular form. By second grade, more of the incorrect responses consisted of using the /-s/ allomorph instead of /-əz/. (Many children stated [gʌtʃs] instead of "gutches" and [wʌtʃs] instead of "watches.") This indicates a basic awareness on part of the children that something must be done to the singular noun to make it plural; they added the most familiar inflection they knew -- /-s/ which is also the first one acquired in the sequence.

Plurals-Spanish. All subjects possess the allomorph /-s/ and are able to apply it to both nonsense and meaningful forms at the kindergarten level. The /-es/ allomorph is not mastered to any degree until the third grade. By third grade, the children control the rule that /-es/ is added to a noun ending in a consonant sound. They have not acquired the rule that /-es/ is also added to singular nouns ending in the letter "y" or in a stressed vowel sound. The ability to apply the /-es/ allomorph to any unfamiliar forms is not acquired by even the third graders. Incorrect responses at all grade levels include a repetition of the Spanish nonsense or lexicon noun in its singular form or the supplying of /-s/ instead of /-es/ to the singular noun. Several children at each grade level supplied the English allomorph /-z/ in the attempt to make the Spanish nouns plural. As /-z/ is not an allomorph in Spanish, this would indicate some interference from English.

Past tense-English. Only the third graders have mastered all the past tense allomorphs /-t/, /-d/, and /-əd/ with lexicon and nonsense verbs. Kindergarten children have not acquired control over any of the allomorphs even with familiar forms. In first grade /-t/ and /-d/ are in a state of learning and are mastered in meaningful lexicon verbs by the second grade. The allomorph /-əd/ for preterite verb formations is not applied to either meaningful or unfamiliar forms until the third grade. Incorrect responses at all grade levels for all allomorphs examined include a repetition of the verb infinitive with no attempt at conjugation or the supplying of the progressive allomorph ("ricking" for "ricked") or the 3rd person present tense allomorphs [s] or [z] ("ricks" for "ricked" or "bomes" for "bomed"). Only a few children overgeneralized the rule and stated [pɪktəd] for "picked," [klaɪmdəd] for "climbed" or [boməd] for "bomed."

Past tense-Spanish. Kindergarten subjects have mastered all the past tense Spanish allomorphs and are able to apply them to meaningful forms. At the kindergarten level the children are still learning to generalize the rules to unfamiliar forms. By first grade, the children have mastered the ability to apply the past tense allomorphs to nonsense forms as well. Incorrect responses include repetitions of the verb infinitive with no attempt at conjugation or the supplying of the Spanish progressive allomorphs /-ando/ or /-iendo/ to the verb stem.

Present progressive. All subjects have mastered the English and Spanish present progressive allomorphs and

are able to apply them to both nonsense and meaningful forms at the kindergarten level.

Present third person singular-English. The allomorph /-s/ for the third person singular (kleats/eats) was mastered by the kindergarten children for the meaningful item and was in a state of learning for the nonsense item. By second grade, mastery of this allomorph was demonstrated in the unfamiliar form. The allomorph /-əz/ (fonces/dances) poses more problems. In second grade, it is in a state of learning and is not mastered until third grade. The nonsense form begins to be in a state of learning in third grade. Errors include repetitions of the verb infinitive ("dance" for "dances" and "kleat" for "kleats") or the stating of the progressive ("eating" for "eats"). One first grade child overgeneralized the rule and said [klitsəz] for [klits].

Present third person singular-Spanish. The Spanish present tense allomorph /-a/ used with /ar/ verbs is mastered with both meaningful and unfamiliar forms in kindergarten. The /-e/ allomorph used with /er/ and /ir/ verbs is mastered with meaningful forms in kindergarten but the children have not mastered the ability to apply this allomorph to unfamiliar forms until the third grade. In addition to repeating the infinitive nonsense verb "dober" or responding with the progressive form "dobiendo," incorrect responses included the supplying of /-a/, the /ar/ verb's third person singular allomorph.

Possessives-English. The scores of each of the plural possessives for both meaningful and nonsense forms was higher than for any of the singular possessives. Newfield and Schlanger (1968) feel that the plural possessive does not actually assess the use of any morphological ability. In their study, for example, 40% of the retarded subjects correctly used the singular form "wug's," 77% used the plural form "wugs'." The same pattern emerged with the bilingual children in the present investigation: 58% of the youngest children correctly used the singular form "wug's," 90% used the plural form. Berko (1958) noted that the wrong answers to the singular possessive items consisted of doing nothing to the word given. If the children just repeated the plural possessive item as stated by the examiner, they would be correct as the plural possessive is already inflected. It appears, therefore, that the plural possessives are not reliable measures of morphological ability.

Kindergarten children are still learning to apply the singular possessive allomorph /-z/ to both meaningful and nonsense words. By first grade they have mastered the use of the allomorph /-z/ in meaningful words and by second grade the children control it in nonsense forms. The allomorph /-əz/ has not been acquired by any of the children. Only 32% of the third graders were able to respond [nɪzəz] ("niz's"). Incorrect responses consisted of not doing anything to the word given. ("It is the niz hat.")

Possessives-Spanish. Both the singular and plural, masculine and feminine possessives are acquired early. Kindergarten children demonstrated mastery over the ability to use all possessives with both meaningful and unfamiliar forms.

Derived agentive. The bilingual kindergarten children have mastered both the English and Spanish agentive allomorphs /-er/ and /-ór/ with the meaningful items "painter"/"pintór." It isn't until third grade that the children generalize the use of these allomorphs to both English and Spanish nonsense forms. Incorrect responses to the derived agentive nonsense items generally consisted of a shrug of the shoulders or an "I don't know"/"No se" response.

Adjectives-English. The kindergarten children have mastered the superlative of the adjective allomorph /-est/ with the familiar form "biggest." It wasn't until the third grade that they demonstrated control of /-est/ with the nonsense form "quirkiest." The comparison of the adjective allomorph /-er/ was not as easy for the children. The meaningful form "bigger" was mastered by the first graders, however; not even the third grade children were able to apply this allomorph to the nonsense form. Only 19% of the third graders correctly responded "quirkier" to the examiner's stimulus. Incorrect responses at each grade level included "quirker," a repetition of the word "quirky," no response and "more quirky." The "more quirky" response may indicate some interference from Spanish.

Adjectives-Spanish. The Spanish rule for forming the superlative of the adjective is not mastered even by the third graders, but does appear to be in a state of learning at this level for the meaningful form. The nonsense form is poorly handled even by these older children. Many of the children responded to this item by repeating the comparative form "más mecoso." In several instances there was a definite vocal emphasis placed on the word "más." This indicates that although the children couldn't think of any of the possible grammatical ways the superlative could be formed in Spanish, they were aware that the semantic implication for the superlative is different from the comparative. The comparison of the adjective rule was easier for the children. This was mastered by first grade for the meaningful item; the ability to apply this rule to an unfamiliar form is not acquired until third grade. Incorrect responses generally consisted of a repetition of the examiner's uninflected adjective or no response.

Discussion of results pertaining to the developmental sequences of morphological rule acquisition in Spanish and English. Examination of Tables 13 and 14 comparing the development of morphological constructions and the generalization of rules to Spanish and English forms by the bilinguals indicates a parallelism in the acquisition of shared structures. It appears that those morphological rules which are similar in both Spanish and English are

acquired in approximately the same order and at the same rate. The rules which are unique to each language are acquired at different times; in many instances the Spanish rules are acquired first. This most likely reflects the linguistic complexity of the specific structures involved. For example, the rules for forming the present progressive, agentive, and noun plurals are similar in both Spanish and English. Examination of the data reveals that the present progressive allomorphs are among the first mastered in Spanish and English. The nonsyllabic plural allomorphs (/s/ in Spanish and /s/ and /z/ in English) are also among the first mastered in both languages. The syllabic allomorphic form of the plural (/es/ in Spanish and /əz/ in English) are among the last to be acquired by the children in both languages. The agentive allomorphs /ór/ and /er/ in Spanish and English, respectively, are acquired at approximately the same time.

On the other hand, the differences in acquisition order reflect language contrasts. For example, the Spanish past tense allomorphs are mastered by the kindergarten children. The English past tense allomorphs /t/ and /d/ are not mastered until second grade and /əd/ is not controlled until the children are in the third grade. The morphological rules for forming past tense in Spanish are quite different from English (see Appendix B) and appear to be less complex linguistically.

Kessler (1972) stated that "contrasts in the simultaneous acquisition of two languages in bilingual children support the theory that languages share deep-structures and that differences derive from language specific rules" (p.221). She initially hypothesized that "morphological structures shared by Italian and English develop in the same order and at the same rate in the bilingual child since these shared structures find their source in a common underlying base and are realized by the same set of transformational rules" (p.229). Results of research conducted by Kessler (1972) revealed that the acquisition of inflectional categories follows approximately the same sequencing in Italian and English with an exception made for those structures requiring language-specific case consideration. She stated, "The Italian system is generally acquired somewhat later, possibly because of the morphophonemics of the language" (p.229). In the present investigation, it appears that the English system is generally acquired somewhat later, probably due to the morphophonemics of the language as well as the effects of bilingualism on second language development in the Cuban/American population.

Discussion of results pertaining to the bilingual's developmental sequence of morphological rule acquisition in English compared with existing data on monolingual English speakers' acquisition of morphological rules. The acquisition order of the various allomorphs is basically similar to the order reported by such investigators as Anisfield and Tucker

(1967), Berko (1958), and Newfield and Schlanger (1968) for monolingual English speaking children. For example both the bilinguals and monolinguals master the /-ɪŋ/ allomorph very early as well as the allomorph /-z/ which occurs correctly first with noun plurals and second with the possessive singular. Words adding syllables such as allomorphs /-əz/ for plurals and present tense third person singular and /-əd/ for past tense are mastered much later in development by the bilinguals as well as the monolinguals. In general the results seem to indicate a similar sequence of acquisition for both language groups with the bilinguals exhibiting a slower learning pace. This finding is supported by the information reported in Table 21 (page 84). These results indicate that by approximately 9-years of age the bilingual children's performance is on par with monolingual 8-year-olds.

Differences between lexicon and nonsense word items.

A t test for correlated samples was used to determine if there were significant differences between the lexicon and nonsense word subtest scores for the BMM-E and the BMM-S. Table 15 contains the results for the English Version, Table 16 for the Spanish Version. For both the BMM-E and BMM-S, the children performed significantly better ($p < .0001$) on lexicon words at all grade levels.

Discussion of results pertaining to the differences between lexicon and nonsense word items.

These results support the conclusion arrived at by Newfield and Schlanger (1968) that there is an undefined time lapse between the production of correct morphological inflection forms within a context of familiar words and the generalizations of these forms to unfamiliar words. Several investigators

Table 15 Summary of the t values testing the differences between means of the total raw scores of the lexicon and nonsense word subtests of the BMM-E.

Grade	t value	df	p
Kindergarten	-12.02	30	<.0001
First	-11.96	29	<.0001
Second	-15.64	29	<.0001
Third	-8.81	30	<.0001

Table 16 Summary of the t values testing the differences between means of the total raw scores of the lexicon and nonsense word subtests of the BMM-S.

Grade	t value	df	p
Kindergarten	-12.16	30	<.0001
First	-10.51	29	<.0001
Second	-13.33	29	<.0001
Third	-9.66	30	<.0001

such as Dever and Gardner (1970), Johnson (1974) and Pettit and Gillespie (1975) contend that this indicates that nonsense tests of morphology may not be valid measures of children's ability in this area, that there are unknown confusion factors inherent in the use of nonsense syllables, and/or the use of nonsense words in sentence completion tests underestimates a child's productive knowledge of morphological rules.

Another more likely explanation pertains to the children's competency level in understanding and applying the morphological rules to new word forms. The difference in scores between the nonsense and meaningful subtests suggests that the acquisition of these rules may not be complete in children of this age. If the children's ability to control the morphological forms is better in familiar words, as demonstrated, then these results suggest that a child's production of a morphological rule in a rehearsed response need not necessarily require complete comprehension of that rule (Larson, Summers and Jacquot, 1976). Larson et al. further states "Conditioning of these rules may result first in correct production using automatic responses followed in later stages by developing comprehension" (p.266). The present investigation which included this comparison study between spontaneous automatic responses using common words and spontaneous responses using nonsense forms on matched grammatical items seems to clarify this conclusion.

Larson, Summers, and Jacquot's (1976) contentions as well as Berko's (1958) original theory that a child supplying correct morphological endings to common words may only indicate that he has merely memorized the forms and does not actually have the working system of morphological forms internalized are further supported by the following observations. In the present investigation, several second and third grade children immediately realized their errors and appropriately self corrected their responses after incorrectly responding to one or more of the lexicon items. After testing was completed and the examiner asked, for example, "Why did you change your answer to 'keys' after saying 'keyses'" or "why did you say 'more bigger' and then say 'no that's wrong, I meant biggest,'" the children would say something to the effect "My first answer didn't sound right after I said it." This observation, that several of the subjects spontaneously corrected their responses to the meaningful stimuli whereas none of the subjects self corrected their responses to the nonsense stimuli tends to confirm the "memorized rule" theories.

Effects of Bilingualism on Language Development

One of the goals of this investigation was to compare a sample of Spanish dominant children with bilingual children on their ability to apply Spanish morphological rules in the hopes that information yielded by such a comparison would help determine what effect bilingualism has on native language development. Results indicate that the bilingual

kindergarten children performed significantly better ($p < .0001$) on the Bilingual Morphology Measure-Spanish Version than the Spanish dominant children of the same age. Table 17 summarizes the results of the t test used to determine if there were significant differences between the Spanish dominant and bilingual kindergarten children's scores on the BMM-S.

Table 17 Summary of the t values testing the differences between mean scores of Spanish dominant and bilingual children on the BMM-S.

TEST	t VALUE	df	p
Nonsense	5.26	48	.0001
Meaningful	4.54	48	.0001
Total Combined	5.39	48	.0001

Incorrect responses by the Spanish dominant children were similar to those made by the bilingual children. There were, however, many more instances of no response, shrugs of the shoulders and "No se" (I don't know) responses by the Spanish dominant children. In addition, none of the Spanish dominant children incorrectly supplied the English allomorph /-z/ in an attempt to make the Spanish singular

nouns plural as did several of the bilingual children. There was no indication of any interference from English in any of the answers given by the Spanish dominant children.

Discussion. An explanation for the bilinguals' better ability to apply morphological rules in Spanish might be that bilingualism encourages a more complete and rapid development of certain linguistic forms than does monolingualism. It is likely that the bilingual children have had experience with inflectional rules in two languages; this repetition enhances their ability to use these rules in their native language. Ben-Zeev (1977) brings out that generalization of particular rules does not depend on mastery of particular words or symbols but on a grasp of the basic idea that the structure of language is subject to change. The experience that bilinguals have in learning two different language structures with the repetitiveness and redundancy in grammar may foster this type of awareness. The bilinguals, therefore, are better able to analyze language as an abstract system. This seems to be indicated by the present investigation as far as primary language development is concerned.

Effects of bilingualism on the children's non-native language development can be seen by comparing aspects of the English spoken by the bilinguals with comparable aspects of English spoken by monolingual American children. Berko (1958) obtained percentages of combined preschool and

first grade children on their ability to correctly produce a variety of morphological forms. For purposes of comparison with Berko's data, mean percentages of the combined bilingual kindergarten and first grade children's correct responses to corresponding items were computed. It should be noted that the Berko children ranged from four to seven years of age as compared to the combined kindergarten and first grade bilingual group of this study who were approximately a year older at both the low and high age range. Table 18 provides a comparison of percentages reported by Berko for combined preschool and first grade children with those obtained for the combined kindergarten and first grade bilingual children used in the present investigation on equivalent BMM-E items.

Newfield and Schlanger (1968) report percentages for a sample of normal monolingual English speaking kindergarten, first and second grade children combined, on the similar task. For purposes of comparison with Newfield and Schlanger's data, mean percentages of the combined bilingual kindergarten through second grade children's correct responses were computed. The children used in Newfield and Schlanger's study ranged from 5 years, 8 months to 8 years, 4 months. The ages of the combined kindergarten, 1st, and 2nd grade bilingual children ranged from 5 years, 4 months to 8 years, 11 months. Table 19 provides a comparison of percentages reported by Newfield and Schlanger for combined kindergarten, 1st and 2nd grade normal monolingual English

Table 18 Comparison of percentages reported by Berko for combined preschool and first-grade children with those obtained for combined kindergarten and first-grade bilingual children on equivalent BMM-E items.

<u>CLASS</u>		<u>CORRECT RESPONSES</u>	<u>MEAN PERCENTAGE CORRECT</u> <u>BMM-E</u>	<u>BERKO</u>	
Plurals	/-s/	mooks*	89	82	
	/-z/	luns	78	86	
		wugs	74	91	
		cras	68	79	
		/-əz/	gutches	13	36
	tasses		12	36	
	nizzes		14	28	
	glasses		58	91	
	Verbs	/-t/	ricked	28	73
		/-d/	spowed	22	52
bomed**			32	78	
/-əd/		motted	12	33	
		melted	20	73	
/-I /		zibbing	82	90	
/-əz/		fonces***	7	48	
Possessives		/-z/	wug's	61	84
	/-əz/	niz's	2	49	
	/-ø/	wugs'	95	88	
		nizzes'	64	76	
Adjectives	/-ər/	quirkier	8	0	
	/-əst/	quirkiest	39	35	
Agentive	/-ər/	zibber	46	11	

*heafs was Berko's equivalent

**binged was Berko's equivalent

***nazzes was Berko's equivalent

Table 19

Comparison of percentages reported by Newfield and Schlanger (1968) for combined kindergarten, first, and second grade normal monolingual English speaking children with those obtained for combined kindergarten, first and second grade bilingual children on BMM-E items.

CLASS	NEWFIELD and SCHLANGER		BMM-E LEXICON		$\bar{x}$ PERCENTAGE		NONSENSE		$\bar{x}$ PERCENTAGE	
	LEXICON WORDS		WORDS		CORRECT		WORDS		CORRECT	
Plurals	/-s/	leafs	sticks		97	99	mooks*		92	91
		dogs	dogs		98	99	wugs		82	91
	/-z/	guns	lions		97	99	luns		86	91
		paws	keys		90	99	cras		77	91
	/-əz/	watches	watches		51	81	gutches		16	39
Verbs	/-t/	noses	noses		59	81	nizzes		18	39
		glasses	glasses		69	81	tasses		12	39
	/-d/	kicked	picked		63	100	ricked		31	90
		played	cried		54	100	spowed		28	90
	/-əd/	melted	melted		32	82	motted		13	65
Possessives	/-iŋ/	running	painting		100	100	zibbing		81	93
	/-əz/	dances	dances		29	87	fonces**		11	67
	/-z/	dog's	dog's		82	100	wug's		66	90
		claus's	girl's		77	80	niz's		1	47
	/-əz/									

*Newfield used heafs

**Newfield used nazzes

speaking children with those obtained for the combined kindergarten, 1st and 2nd grade bilingual children on corresponding BMM-E items.

Pettit and Gillespie (1975) report percentages for 6, 7, and 8-year-old children on their ability to correctly produce inflectional endings to ten nonsense and ten meaningful words. The bilingual kindergarten children of the present investigation (mean age = 6 years) were compared with the monolingual 6-year-olds; the bilingual 1st graders (mean age = 7 years 2 months) were compared with the monolingual 7-year-olds; the bilingual 2nd graders (mean age = 8 years, 3 months) were compared with the monolingual 8-year-olds of Pettit and Gillespie's study on twenty corresponding items. Table 20 provides a comparison of percentages reported by Pettit and Gillespie for normal 6, 7, and 8-year-old monolingual English speaking children correctly producing a variety of morphological forms with those percentages obtained for kindergarten, first, and second grade bilingual children on equivalent BMM-E items.

Examination of Tables 18, 19, and 20 indicates that the findings for the bilingual subjects were compatible with the results found for monolinguals by all other investigators for meaningful and nonsense nouns requiring the short form plural allomorphs /-s/ or /-z/. The bilinguals, as evident by the comparisons with monolinguals, possess much less ability to apply the syllabic plural allomorph /-əz/ to both meaningful and unfamiliar forms.

Table 20 Comparison of percentages reported by Pettit and Gillespie (1975) for 6, 7 and 8-year-old monolingual English speaking children correctly producing the appropriate morphological forms with those percentages obtained for kindergarten, first and second grade bilingual children on corresponding BMM-E items.

NONSENSE ITEMS	MONOLINGUAL BILINGUAL		MONOLINGUAL BILINGUAL		MONOLINGUAL BILINGUAL	
	6-YEAR-OLDS	KINDERGARTEN	7-YEAR-OLDS	1ST GRADE	8-YEAR-OLDS	2ND GRADE
wugs	100%	61%	90%	87%	100%	87%
spowed	70%	16%	50%	27%	100%	40%
tasses	10%	0%	0%	23%	50%	13%
mooks (heafs)*	90%	81%	80%	97%	100%	100%
motted (boddod)*	30%	3%	40%	20%	50%	13%
wug's	90%	52%	90%	70%	100%	77%
zibbing	60%	74%	60%	90%	90%	80%
zibber	10%	35%	30%	57%	80%	53%
quirkier	50%	6%	80%	10%	80%	13%
quirkiest	90%	35%	60%	43%	90%	70%
<u>LEXICON ITEMS</u>						
dogs	100%	97%	90%	97%	100%	100%
cried (opened)*	100%	35%	100%	60%	100%	77%
glasses (dresses)*	90%	45%	100%	70%	100%	93%
sticks (leafs)*	100%	94%	90%	97%	100%	100%
melted (planted)*	100%	6%	100%	33%	100%	33%
dog's (John's)*	100%	58%	100%	90%	100%	97%
painting	100%	100%	100%	100%	100%	100%
painter	60%	77%	80%	83%	90%	97%
bigger	100%	71%	100%	80%	100%	80%
biggest	80%	87%	100%	97%	100%	93%

*words used in Pettit and Gillespie's study

The data reveal that the bilinguals remain behind the monolinguals in their ability to apply the regular past tense English allomorphs. The bilinguals do as well as the monolinguals in applying the progressive allomorph and agentive allomorph to familiar as well as nonsense verbs. In fact, compared with the data in Table 19, the kindergarten and first grade bilingual children surpass the monolinguals in their ability to generalize these allomorphs to new forms. The bilinguals are quite behind the monolinguals in their ability to use the third person singular present tense allomorph /-əz/.

With regard to adjectives, the findings for the bilingual subjects were compatible with those found for monolinguals. Pettit and Gillespie's data indicate that the bilinguals have less ability to control the comparison and superlative of the adjective allomorphs with nonsense forms. Lastly, the bilinguals acquire mastery of the singular possessive allomorphs at an older age than the monolinguals.

Table 21 compares the performance of the bilingual third graders (mean age = 8 years, 11 months) with Pettit and Gillespie's monolingual 8-year-olds. The purpose of this contrast is to help determine if older bilingual children finally acquire the proficiency with English morphological rules that their younger monolingual counterparts have or if it appears they will need special assistance to help them develop the underlying knowledge of

Table 21 Comparison of percentages correct for each inflectional item reported by Pettit and Gillespie for normal monolingual 8-year-olds with those obtained for the third grade bilingual children (mean age = 8 years, 11 months)

NONSENSE ITEMS	MONOLINGUAL 8-YEAR-OLDS	BILINGUAL 3RD GRADE
wugs	100%	100%
spowed	100%	77%
tasses	50%	52%
mooks (heafs)*	100%	100%
motted (bodded)*	50%	74%
wug's	100%	97%
zibbing	90%	100%
zibber	80%	71%
quirkier	80%	19%
quirkiest	90%	94%
<u>LEXICON ITEMS</u>		
dogs	100%	100%
cried (opened)*	100%	94%
glasses (dresses)*	100%	97%
sticks (leafs)*	100%	100%
melted (planted)	100%	87%
dog's (John's)	100%	100%
painting	100%	100%
painter	90%	100%
bigger	100%	100%
biggest	100%	100%

*items used in Pettit and Gillespie's study

morphological rules that monolinguals seem to acquire naturally as they mature.

Discussion. With the exception of noun plural allomorphs /-s/ and /-z/ and the present progressive and agentive allomorphs, bilinguals are delayed in their ability to correctly apply a variety of morphological forms when speaking their non-native language, English, as compared to monolingual speakers of English. Examination of Table 21 reveals that the bilingual children do finally achieve mastery over many of the morphological forms by approximately 9-years of age and are not far behind monolingual 8-year-olds on other inflections. Their greatest difficulty seems to be with their ability to generalize the comparison of the adjective allomorph to new forms (only 19% of the third graders could supply the nonsense form "quirkier"). This is most probably due to the fact that the linguistic structure of the corresponding rule in their native language is completely different. (In Spanish the comparative of the adjective is formed by placing a free morph-- the word "más" before the adjective being compared; in English, a bound morph-- /-ər/ is tacked on the end of the adjective and is part of the same word.)

(In general, it seems that bilingualism does not prevent children from eventually achieving mastery of the grammatical rules of the second language. It does hinder them to the extent that they don't learn the

various linguistic rules as rapidly as monolinguals. Rather than relying on the maturation process alone, it might be beneficial to provide the bilingual children with some special educational intervention. With assistance the bilingual students might be able to achieve mastery of the grammatical morphemes at the same time as their monolingual peers.)

To further explore the effects of bilingualism on the children's language development, t tests were used to test for significant differences between separate grade levels for all BMM-E and BMM-S scores as well as to test for significant differences between BMM-E and BMM-S scores within each grade level. Additionally, this analysis helped to determine if being bilingual at the lexical level of language is an indicator of bilingualism at the morphological level of language.

Table 22 summarizes the results of the t test used to test for significant differences between kindergarten and first grade, first and second grade, and second and third grade for all Bilingual Morphology Measure scores. Table 23 summarizes the results of the t test used to test for significant differences between the BMM-E and BMM-S scores for the kindergarten children, first graders, second graders, and third graders.

Discussion. Examination of the data presented in Table 22 reveals that the only subtest on which the bilingual children demonstrate a significant increase in their productive knowledge of morphological rules as they progress from grade to grade is the BMM-E Meaningful subtest. No

Table 22 Summary of t test results of differences between grades for all Bilingual Morphology Measure scores

	COMPARISON	t VALUE	df	t PROBABILITY
BMM-S Nonsense.	Grade K x Grade 1	-1.762	118	0.080
	Grade 1 x Grade 2	0.409	118	0.683
	Grade 2 x Grade 3	-4.188	118	0.000 **
BMM-S Meaningful	Grade K x Grade 1	-2.899	118	0.004 **
	Grade 1 x Grade 2	-1.410	118	0.161
	Grade 2 x Grade 3	-3.660	118	0.000 **
BMM-S Total	Grade K x Grade 1	-2.457	118	0.015 *
	Grade 1 x Grade 2	-0.390	118	0.697
	Grade 2 x Grade 3	-4.344	118	0.000 **
BMM-E Nonsense	Grade K x Grade 1	-3.282	118	0.001 **
	Grade 1 x Grade 2	-0.944	118	0.347
	Grade 2 x Grade 3	-4.871	118	0.000 **
BMM-E Meaningful	Grade K x Grade 1	-5.585	118	0.000 **
	Grade 1 x Grade 2	-2.824	118	0.006 **
	Grade 2 x Grade 3	-3.189	118	0.002 **
BMM-E Total	Grade K x Grade 1	-4.602	118	0.000 **
	Grade 1 x Grade 2	-1.871	118	0.064
	Grade 2 x Grade 3	-4.535	118	0.000 **

*significant at .05 level

**significant at .01 level

Table 23 Summary of t test results of differences between BMM-S and BMM-E scores within grade levels

	COMPARISON	t VALUE	df	p
Kindergarten	BMM-S Nonsense x BMM-E Nonsense	5.13	30	<.0001*
	BMM-S Meaningful x BMM-E Meaningful	3.12	30	<.001*
	BMM-S Total x BMM-E Total	4.56	30	<.0001*
First Grade	BMM-S Nonsense x BMM-E Nonsense	2.63	29	<.01*
	BMM-S Meaningful x BMM-E Meaningful	-0.81	29	n.s.
	BMM-S Total x BMM-E Total	1.42	29	n.s.
Second Grade	BMM-S Nonsense x BMM-E Nonsense	1.15	29	n.s.
	BMM-S Meaningful x BMM-E Meaningful	-3.97	29	<.0001**
	BMM-S Total x BMM-E Total	-1.28	29	n.s.
Third Grade	BMM-S Nonsense x BMM-E Nonsense	-1.90	30	n.s.
	BMM-S Meaningful x BMM-E Meaningful	-6.57	30	<.0001**
	BMM-S Total x BMM-E Total	-4.13	30	<.0001**

*significantly better in Spanish

**significantly better in English

significant improvement in their productive knowledge of Spanish morphological rules as applied to either nonsense or meaningful forms occurs between first and second grade. Examination of Table 23 indicates that at the kindergarten level the children categorized as bilingual by the James Language Dominance Test are not really bilingual at the morphological level of language as they are significantly better in Spanish in their ability to apply morphological rules to both familiar and unfamiliar forms. By second grade the children are significantly better in English with regard to productive control of inflectional rules with meaningful forms, and by third grade they have a significantly greater overall ability to apply English morphological rules.

This all indicates that not only does morphological rule development in their native language stagnate between first and second grade, it also fails to keep pace with the acquisition of the secondary language. By third grade they are significantly poorer in Spanish than English whereas at the kindergarten level they were significantly better. In addition, it may be concluded that comprehension and production of English vocabulary items at the kindergarten level do not seem to indicate that the children are bilingual in other linguistic areas. The James Language Dominance Test is a better predictor of bilingualism at the morphological level of language in first grade children.

CHAPTER IV

SUMMARY

The results provided insight into the three main areas that this study initially sought to investigate: 1) that of obtaining normative information regarding the approximate ages at which bilingual children acquire productive control of various morphological rules, 2) that of obtaining information about English and Spanish morphological rule acquisition sequences by bilinguals, and 3) that of obtaining information about the effects bilingualism has on the native and non-native language development of Cuban-American children.

First, normative data were obtained and grade level medians, means, standard deviations and percentile rank equivalents for the raw scores by grade level were reported for Spanish and English. Validity was indicated by the finding that the children's scores increased significantly ($p < .001$) as grade level increased. A test-retest investigation indicated good reliability as well. In addition, the finding that children with identified poor language development did poorer than the normal children indicates the ability of the BMM to discriminate between different groups of children.

Second, results indicated that those morphological rules which are linguistically similar in the two languages are acquired at approximately the same rate and in the same order. Rules not sharing a common linguistic structure are acquired at different times. A comparison of the bilingual children's performance in English with existing data on morphological rule acquisition by monolingual American children revealed that the bilingual children eventually acquire English morphological rules but at a much slower rate than the monolinguals. Error analysis revealed that the errors in the learning of the second language were not the result of interference from the first language.

Finally, the various effects of bilingualism on language development were looked at. At the kindergarten level the bilingual children performed significantly better than their Spanish dominant peers on the BMM-S subtests. This may result from the bilingual children having had experience with inflectional rules in two languages which enhanced their ability to use these rules in their native language. However, as the bilingual children's grade level increased, their productive control of Spanish morphological rules did not develop as rapidly as their control over the corresponding rules in English. By third grade, the children had significantly greater ability to apply inflectional rules in English.

Future Research

Several areas of future research could provide valuable information which would enhance already existing information including that generated by this study. By administering both versions of the BMM to a sample of bilingual 5-year-olds, norms could be extended to include this younger age group. It would be interesting to see if there would be a significant increase in scores between the 5-year-olds and the 6-year-olds. In addition, the inclusion of other grammatical categories in a test battery would allow for a broader discussion of bilingual children's linguistic performance. Another extension of the present study would be to administer the BMM to a larger sample of a language deviant population and compare their performance with that of normals.

Other goals of future research in this area might be to 1) determine if the BMM can predict the occurrence or nonoccurrence of errors in the free speech of bilingual children in Spanish and English and 2) determine the effect bilingualism has on native language development and maintenance by comparing the developmental sequences of an aspect of the Spanish spoken by monolingual Spanish speaking children of various ages with the Spanish spoken by bilingual children of matched ages.

Implications

The results of this study may be considered with respect to assessment and remediation procedures in classroom

and clinical situations. The finding that children with observed delayed language performed much poorer than the normal children suggests that these children could be identified at an early age. The results of testing with the BMM would enable the language specialist to make statements regarding a child's level of language development and to plan remediation strategies. Language instruction specifically designed to enhance morphological development could then begin.

Teachers of the Spanish speaking child should be alert to the types of error patterns of morphology which have been consistently observed in the expressive language of the bilingual children. For example, the Spanish teacher, if made aware that even the third grade children don't have expressive control over the /-es/ allomorph for forming plurals in Spanish, could plan some specific lessons in this area to be presented in Spanish class.

It might be helpful to make a direct comparison between the Spanish and English rules for pluralization, for example. The teacher might say something to the effect:

We say "lionz" in English because a noun that ends in an /n/ sound in English takes the sound "Z" to form the plural BUT we don't say "leonz" in Spanish because IN SPANISH a noun that ends in an /n/ sound takes the sound "ES" to form the plural. That is why we say "lionz" in English and "leones" in Spanish.

APPENDIX A
ADMINISTRATION PROCEDURES
Nonsense Versions

Seat the child in a comfortable position in which he can see and respond easily to the picture stimulus. Give the child the following directions (give in Spanish when administering the BMM-S):

I am going to show you some pictures of some things you have never seen before. Listen very carefully because I am going to ask you some questions about them. Okay?

Show the child the first practice plate and ask the stimulus question. Continue to the second practice plate. If, in your opinion the child understands the task, proceed to the first plate of the instrument and continue testing. If necessary, get the child's attention by saying, "Ready" then present the first plate and question. The practice items at the beginning of the subtest should be repeated until the child understands the task. If necessary, provide the answers for the practice items and then re-present them until the child responds on his own.

In presenting the stimulus questions, speak clearly and slightly slower than in normal conversation. The target nonsense word in the stimulus should be emphasized. If it is felt that the child did not understand or if the child

did not respond, the stimulus may be repeated. If the child responds in an unexpected way or gives reason to believe he has not perceived the stimulus correctly, the child should be taught the nonsense name and be asked to repeat it before the particular test plate and stimulus question are re-presented.

Example: The examiner shows a cartoon-like animal and says, "This is a wug." Then the examiner shows two of the same cartoon-like animals and says, "Now there are two of them. There are two _____." If the child responds "bugs" or "wubs" or "fugs," he may be considered to have perceived the stimulus incorrectly.

If the above were to occur, re-present the one wug and say "This is a wug" and then ask "What is it?" If the child repeats the stimulus as it was provided, he has perceived it correctly. Continue with the test. Natalicio and Natalicio (1969) stated:

Before a judgement is made and statistics calculated regarding plural responses, it seems necessary to consider the stimulus itself and its perception by the S; we cannot judge the S's internalized rule for pluralization if we do not know the singular stimulus to which he responded. (p.211)

The above contentions of Natalicio and Natalicio were generalized to include all morphological forms tested in the present investigation, not only noun plurals.

Meaningful Versions

After completing the administration of the nonsense version, give the child the following instructions (say in English for the BMM-E; Spanish for the BMM-S):

"Now I am going to show you pictures of animals and people that you have seen many times. Listen carefully because I have more questions to ask you. Ready?"

Show the child the practice plate and provide the auditory stimulus. (There is only one practice item at the beginning of each semantically meaningful version). If the child appears to understand the task, proceed to the first plate and continue testing. Once again, if necessary, teach the practice item until the child responds to it correctly.

Procedures Common to Both Versions

Give the test at an appropriate rate for each individual child. It is important that the child is ready to respond before giving the stimulus sentence, and that he be allowed enough time to respond.

As the child responds, write his actual response in the appropriate blank on the answer form. If the child changes his initial response, always accept the final response.

Do not give verbal reinforcement to individual responses made by the child. Give general reinforcement such as:

"You are doing a very good job (child's name) Keep up the good work. Ready for the next question?"

Give the reinforcement when it appears necessary to keep the child's interest in the task at a high level. If the child does not need this verbal praise during the test, do not give it.

Place the answer sheet in such a manner that it is not obvious to the child. If the child asks you to repeat an auditory stimulus, do so. This should not exceed two times.

When the testing is complete, thank the child for working with you.

APPENDIX B

PROCEDURES FOR SCORING RESPONSES

Bilingual Morphology Measure-Spanish Nonsense Version

Any response demonstrating productive knowledge of rules of Spanish morphology or for which a grammatically correct Spanish model could be found was scored as correct. The specific rules and appropriate responses will be described for each inflection tested by the BMM-S Nonsense Subtest.

Plurals. In Spanish, the plural morpheme chosen depends on the final letter in the orthographic spelling of the singular noun. Appropriate stimuli were used to test the children's productive knowledge of the following rules for forming plurals in Spanish:

1. [s] is added when the singular noun ends in an unaccented vowel.
2. [es] is added when the singular noun ends in a consonant or accented vowel.

As it is common in the dialect of Spanish spoken by Cubans to substitute an aspirate sound [h] for final [s] in words, children were scored as correct if they responded (for example) [nerah] instead of [neras] or [pironeh] instead of [pirones] for the plural of the test items "nerra" and "piron," respectively.

Past tense. In Spanish all verb infinitives end either in orthographic "ar," "er," or "ir." There are two ways

of forming the past tense for all third person singular regular verb:

1. The third person singular past tense of an "ar" verb is formed by dropping the /ar/ and adding [o].
2. The past tense of "er" and "ir" verbs is formed by dropping the /er/ or /ir/ and adding [io].

Several children at each grade level supplied the imperfect progressive form (the Spanish equivalent of "was + verb+ing") instead of the preterite. As this is also a grammatically correct way within the context of the examiner's stimulus of expressing an action that happened in the past, this use of the imperfect progressive was considered correct.

Present progressive. There are two ways of forming the present progressive tense in Spanish. The morpheme /ando/ is added to the stem of "ar" verbs; the morpheme /iendo/ is added to the stem of "er" and "ir" verbs. Only these responses demonstrating knowledge of the proper progressive tense morphemes were considered correct.

Singular possessive. The rule for forming the singular possessive in Spanish takes two forms of the "of construction." The contraction "del" (of the) is placed before a masculine singular noun. The words "de la" (of the) are placed before a feminine singular noun. Several children said "de el" (his) or "de ella" (hers) instead of "del lito" and "de la nerra." As these substitutions of the masculine and feminine singular pronouns for the nonsense stimulus nouns "lito" and "nerra" are grammatically correct, they were also accepted as correct responses.

Plural possessive. The rule for forming the plural possessive in Spanish takes two forms of the "of construction." The words "de los" (of the) are placed before a masculine plural noun. The words "de las" (of the) are placed before a feminine plural noun. Several children responded "de ellos" (theirs-- masculine) and "de ellas" (theirs -- feminine) instead of "de los litos" and "the las nerras." These substitutions of the masculine and feminine plural pronouns for the nonsense stimulus plural nouns were accepted as correct responses.

Present tense. There are two ways of forming the present tense of all third person singular regular verbs:

1. The third person singular present tense of an "ar" verb is formed by dropping the /ar/ and adding [a].
2. The third person singular present tense of "er" and "ir" verbs is formed by dropping the /er/ or /ir/ and adding [e].

Responses had to conform to these rules to be considered correct.

Derived agentive. Agentives are generally derived from related verbs, as they are in English. To form the agentive from a verb, the /ar/, /er/ or /ir/ of the verb is dropped and either [ór] or [adór] is added to the stem of the verb. Any child stating "fintór" or "fintadór" in response to the examiner's stimulus designed to elicit the agentive was considered correct.

Comparison of the adjective. To form the comparison of the adjective in Spanish, the word "más" (more) is placed

in front of the adjective in Spanish, the word "mas" (more) is placed in front of the adjective being compared. The children unable to supply the word "más" to indicate comparison of the adjective presented as a stimulus were scored as incorrect.

Superlative of the adjective. The morpheme [ísimo] is generally added as a suffix to the original adjective to form its superlative. Other grammatically correct ways of expressing the superlative in Spanish is by the use of such words as "muy" (very), "mucho más" (much more), "el más" (the most), and "todavía más" (still more) in front of the original adjective. Any of the above responses to the morphology test stimulus designed to elicit the superlative of the adjective were considered correct.

Meaningful Version

The specific rules and appropriate responses described for each inflection tested by the BMM-S Nonsense Subtest are the same for the BMM-S Meaningful Subtest with one exception. "Mediana" (medium) was accepted as a correct response to item #14 as well as "más grande" (bigger).

Bilingual Morphology Measure - English

For both the nonsense and meaningful subtests of the BMM-E, only forms of the inflections dictated by regular rules of English morphology were considered correct. Specific rules of English morphology will not be described as they were for Spanish as readers of this dissertation know them. As with the Spanish version, children supplying the imperfect

progressive form "was spowing" or "was crying" instead of the preterite "spowed" or "cried" respectively, were not penalized. "Medium" was accepted as a correct response to item #14 of the meaningful subtest as well as the expected response "bigger."

APPENDIX C

BMM-S ANSWER SHEET

Name: _____
 Birthdate: _____
 School: _____

Grade: _____
 Sex: _____
 Date: _____

Semantically Non-Meaningful Test					Meaningful Test			
#	Correct Response	Yes	No	Actual Response	Correct Response	Yes	No	Actual Response
P1	mipas				vasos			
P2	bulos							
1	nerras				palos			
2	pirones				leones			
3	bantó				lloró			
4	micales				animales			
5	molió				recogió			
6	litos				perros			
7	mubíes				rubíes			
8	raves				llaves			
9	tapices				narices			
10	forrió				derretió			
11	deyes				reyes			
12	de la nerra				de la niña			
13	de las nerras				de las niñas			
14	más mecoso				más grande			
15	mecosísimo el más mecoso muy mecoso				grandísimo el más grande muy grande			
16	fintando				pintando			
17	fintór				pintór			
18	lunta				baila			
19	del lito				del perro			
20	de los litos				de los perros			
21	dobe				come			

APPENDIX D

BMM-E ANSWER SHEET

Name: _____
 Birthdate: _____
 School: _____

Grade: _____
 Sex: _____
 Date: _____

<u>Serantically Non-Meaningful Test</u>					<u>Meaningful Test</u>			
#	Correct Response	Yes	No	Actual Response	Correct Response	Yes	No	Actual Response
P1	ligs				kings			
P2	goops							
1	mooks				sticks			
2	luns				lions			
3	spowed				cried			
4	gutches				watches			
5	ricked				picked			
6	wugs				dogs			
7	tasses				glasses			
8	cras				keys			
9	nizzes				noses			
10	motted				melted			
11	bomed				climbed			
12	niz'				girl's			
13	nizzes'				girls'			
14	quirkier				bigger			
15	quirkiest				biggest			
16	zibbing				painting			
17	zibber				painter			
18	fonces				dances			
19	wug's				dog's			
20	wugs'				dogs'			
21	kleats				eats			

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BIOGRAPHICAL SKETCH

Paulette Dale was born in New York City, New York, where she lived with her parents and older brother.

She graduated from Newtown High School in Queens.

Ms. Dale attended the University of Madrid and Queens College, and received her Bachelor of Arts degree in Communication Disorders from Queens College of the City University of New York.

After obtaining her Master of Science degree in speech pathology from the University of South Florida, Tampa, she has continuously been employed as a speech pathologist in various settings. Ms. Dale first worked as an itinerant speech pathologist in the Broward County Public School System, then as the bilingual diagnostician on the Dade County Public School System's Diagnostic Team designed to identify children in need of special education. For the last four years, she has been employed as the Director of the Miami Dade Community College South Campus speech and hearing clinic as well as an assistant professor in the Department of Communication Arts and Philosophy where she teaches such courses as Introduction to Speech Pathology, Phonetics, Public Speaking and Voice and Diction.

In the summer of 1975, she began her doctoral program on a part-time basis at the University of Florida where her area of major interest in speech pathology was language development and disorders in children. This was complemented by a concentration in learning disabilities.

Ms. Dale has received the Certificate of Clinical Competence in Speech Pathology from the American Speech and Hearing Association and the License in Speech Pathology from the state of Florida. She also holds a Florida teaching certificate.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Robert J. Scholes

Robert J. Scholes, Chairman
Professor of Speech

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Thomas B. Abbott

Thomas B. Abbott
Professor of Speech

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Cecil D. Mercer

Cecil D. Mercer
Associate Professor of Special
Education

This dissertation was submitted to the Graduate Faculty of the Department of Speech in the College of Liberal Arts and Sciences and the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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